THREE ESSAYS ON DIRECTOR LABOR MARKET: A STRUCTURAL NETWORK VIEW

A Dissertation

by

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ABSTRACT

Past research has devoted lots of attention to exploring board functions, board composition, and board structures. However, our current knowledge on director mobility, including director selection and director exit, remains limited. Boards are consisting of individual directors. Without sufficient knowledge, companies may have a difficult time to establish and maintain efficient boards.

In the first essay, I take a firm perspective to examine how network structural factors affect director selection. I argued that firms tend to select individuals who occupy superior network positions as directors. I then examine how the network structural positions of the recruiting firm may affect the proposed relationship. I find that firms prefer directors who occupy a brokerage position, which can bring more new and diversified knowledge into the firm. Further, the director's central position shows a strong network embeddedness effect to prevent directors from moving.

In my second essay, I focus on the effect of network structural positions on director exit. I take an individual perspective to argue that directors serve on boards to obtain social capital. Therefore, directors who occupy advantageous network positions are more likely to exit from their current companies because those directors can better detect other companies which can enable them to accumulate social capital better. Further, I examined the contingency effect of their current firms' network structural position. Results suggest that directors who occupy a brokerage position to get information are more likely to exit from their current companies, while directors who

occupy a central position experience strong network embeddedness effect and thus become less likely to exit.

In my third essay, I adopted the stochastic actor-oriented models to explore at a network dyadic level, how recruiting firms and directors form appointment ties after the directors' exit from their current companies. I argued that directors tend to establish ties with recruiting companies which can help them reconstitute lost social capital, or gain new social capital. The number of existing indirect ties between individual directors and the recruiting companies and director gender are examined as two contingencies. The results suggest a strong network inertial effect probably caused by network embeddedness.

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1. INTRODUCTION

There is broad agreement among researchers that a board acts as a major mechanism of corporate governance and can affect corporate strategy and other significant corporate-level outcomes (Oehmichen, Schrapp, & Wolff, 2017; Rowley, Shipilov, & Greve, 2017; Wasserman, 2017; Withers & Fitza, 2017). Given the importance of boards, corporate governance scholars devote much attention to boards issues such as building a better understanding of board function, board composition and structure, and board power dynamics (Chen, Crossland, & Huang, 2016; Cuypers, Ertug, Reuer, & Bensaou, 2017; Dalton & Dalton, 2011; Harvey, Currall, & Hammer, 2017; Hillman, Withers, & Collins, 2009; Krause, Semadeni, & Cannella, 2013; Withers & Fitza, 2017). The idea behind these studies is that by better understanding the role of boards, including the impacts of board function, board composition, board structure and board power dynamics, companies can better establish or adjust their boards according to their own situation (Dalton, Daily, Ellstrand, & Johnson, 1998; Dalton & Dalton, 2011; Dalton, Hitt, Certo, & Dalton, 2007). However, our current knowledge on director successions, including director selection and director exit, is insufficient. Without sufficient knowledge, researchers and companies may have a difficult time forming a solid conclusion about how to obtain new board directors and how to retain those directors. Given that director succession remains a significant but understudied area, this dissertation will explore the antecedents of director selection and director exit, respectively. Further, this dissertation addresses director mobility, i.e., the issue of where a director goes after an exit from the previous company to the next to provide a deeper understanding of director succession.

The past research has established that social network factors, including social capital and reputation, social relationships and network ties can affect director succession (for a recent review, see Withers, Hillman, & Cannella, 2012b). Specifically, director selection can be affected by a director's social capital and network ties with certain individuals or organizations (Beckman, Haunschild, & Phillips, 2004; Callahan, Millar, & Schulman, 2003; Deutsch & Ross, 2003; Seidel & Westphal, 2004; Westphal & Stern, 2006; Zhu & Chen, 2015b). Although director exit has not been directly linked to network factors, the research has shown that director exit may be affected by social reputation, which is also a type of social capital (Arthaud-Day, Certo, Dalton, & Dalton, 2006; Harrison, Boivie, Sharp, & Gentry, in press; Jiang, Cannella, Xia, & Semadeni, 2017b; Marcel & Cowen, 2014; Withers, Corley, & Hillman, 2012a). In addition, personal considerations and biases are believed to affect director exit (Boivie, Graffin, & Pollock, 2012; Withers et al., 2012a). Building on the past research, this dissertation employs a structural network perspective to explore the antecedents of director mobility, including director selection, director exit, and director movements (Burt, 1980b; Mizruchi & Bunting, 1981). Given that social network structures can be largely related to social capital, social ties and relationships and that individuals seek to expand their network and establish an advantageous network position, it is highly relevant and important to directly examine how social network structure can affect both selection and exit (Burt, 2004; Carnabuci & Diószegi, 2015; Fleming & Waguespack, 2007; Shipilov

& Li, 2008; Shipilov, Rowley, & Aharonson, 2006; Tan, Zhang, & Wang, 2015). Going beyond the current director succession research, this dissertation explores the impacts of network structure at the director level. By understanding how a director's interlock network can affect his or her succession, this study can provide suggestions for both companies and directors.

This dissertation consists of three studies. The first study examines how the director-level interlock network structure affects director selection, the second study examines how director-level network structure affects director exit, and the third study examines at a bipartite network level where a director moves after an exit.

1.1. Introduction for study 1

How companies select directors remains one of the most important questions in corporate governance. The board of directors is a major governance mechanism to monitor CEOs and provide resources and advice to the company; thus, it has significant influence on corporate operations (Carpenter & Westphal, 2001; Desai, 2016; Howard, Steensma, Lyles, & Dhanaraj, 2016; Johnson & Greening, 1999; Krause, Withers, & Semadeni, 2016; Westphal, 1999). However, the current understanding of director selection is insufficient. Specifically, our knowledge about the antecedents of director selection is relatively limited (for a review, see Withers et al., 2012b). However, a significant amount of research has explored the influence of board composition and leadership structure (for reviews, see Daily, Dalton, & Cannella Jr, 2003; Dalton et al., 1998; Dalton, Daily, Johnson, & Ellstrand, 1999; Withers et al., 2012b) showing the importance of suitable directors. In addition to this main stream of the board composition literature, some studies suggest that directors are selected because of certain network considerations. For instance, Westphal and colleagues show that directors may be selected because of their social ties and socially oriented behaviors towards CEOs and other decision makers (Stern & Westphal, 2010; Westphal & Milton, 2000; Westphal & Shani, 2016; Westphal & Stern, 2006, 2007; Westphal & Zajac, 1995; Zajac & Westphal, 1996). Specifically, director candidates' previous work experience and demographic characteristics can serve as social ties to make them more likely to be selected by certain boards while less likely to obtain board seats from some other boards (Westphal & Zajac, 1995; Zajac & Westphal, 1996). In addition, Zhu and Westphal (2014) show that social ties with current CEOs and directors, and social ties with people similar to the current CEO, may increase individuals' chances of being selected as directors. Similarly, Kim and Cannella (2008b) show that directors' social capital, measured as the total number of social connections within and outside the focal firm, affects the directors' chance obtaining additional appointments. The above research suggests that companies may want to have people with certain network attributes as directors. However, the current director selection literature mainly considers the relational perspective of networks, and it has largely ignored the structural attributes of networks (Stern & Westphal, 2010; Westphal & Milton, 2000; Westphal & Shani, 2016; Westphal & Stern, 2006, 2007; Westphal & Zajac, 1995; Zajac & Westphal, 1996). Given that network structural characteristics are shown to have significant effects on other key individual and organizational-level outcomes (Ahuja, 2000; Ahuja, Polidoro, & Mitchell, 2009; Ahuja, Soda, & Zaheer, 2012; Li, Li, Guo, Li, & Harris, In press;

Sosa, 2011), studying director selection from a network structure perspective may help both companies and researchers to better understand the director selection process and provide more accurate and generalizable conclusions. Therefore, the main purpose of this study is to explore the network structure characteristics that can affect director selection.

In addition, the majority of the previous research on director selection has been based on predicting whether a specific group of people are more likely to be selected or to leave by having certain types of ties, while largely ignoring the within-group heterogeneity for each director. For example, a group of individuals with similar functional backgrounds to the current CEO and directors may be more likely to be selected as new directors (e.g. Westphal & Zajac, 1995); however, the literature has ignored the fact that two individuals with the same functional background may differ. For example, one female and one male can have a similar educational level and insider/outsider status; however, they may behave very differently, and thus their likelihood of being selected may also be very different. To address this individual-level heterogeneity issue, this study examines director selection with regard to the interlock network at the individual level. However, given that social network theory has assumed structural equivalence (Burt, 1987; Walker, 1985; Zaheer, Gözübüyük, & Milanov, 2010), meaning that network theory assumes individuals who occupy similar network structural positions to be commensurate with one another, this study further explores how the personal characteristics of each director may affect the relationship between individual network structure and director selection. Specifically, this study examines how gender as an important individual-level attribute may affect the relationship between network structure and director selection.

Similarly, when addressing the importance of individuals' social perspective on director selection, some of the past research has also ignored the impacts of firm-level heterogeneity on selection outcomes, which is another limitation of our understanding of director selection (e.g. Zhu & Westphal, 2014). Therefore, this study also aims at exploring the contingent effects of firm-level characteristics. Specifically, I examine the contingency effect of the financial performance of the director candidate's home company. Firm financial performance is widely adopted as a major metric to evaluate CEO and board performance (Fich, 2005; Harrison et al., In press). The recruiting firm is very likely to check the performance of its director candidates' home company before making its final selection decision.

This study makes several contributions. First, it contributes to the director selection literature. Currently, our knowledge about director selection remains very limited. Within those limited studies, a majority explore how network relationships, including social connection and social psychological consideration, may affect selection outcome. Building on such existing knowledge, this study explores how another aspect of social networks, i.e., network structures, may affect director selection (Stern & Westphal, 2010; Westphal & Milton, 2000; Westphal & Shani, 2016; Westphal & Stern, 2006, 2007; Westphal & Zajac, 1995; Zajac & Westphal, 1996). Going beyond the existing director selection literature, this study examines how superior network positions, including network centrality and brokerage at an interlock network at the individual level may affect that focal director's possibility of being selected by recruiting companies.

Second, this study contributes to the board literature and general corporate governance research by taking a structural network perspective. By integrating social network theory with agency theory, resource dependence theory, and an information processing perspective, this study aims to document how network structural characteristics might affect director selection. Whereas other studies have either examined the effect of firm-level network characteristics in firm-level output (Grigoriou & Rothaermel, 2017; Paruchuri & Awate, 2017; Shipilov, Godart, & Clement, 2017) or the effect of other general social characteristics in director selection (Kim & Cannella, 2008c; Withers et al., 2012b; Zhu & Chen, 2015b), this study bridges those two streams of literature to propose that occupying superior network positions, such as having higher centrality or being a network broker, can have positive effects on director selection. In addition, this study explores the contingency role of gender and firm performance and suggests that being female and coming from a well-performing company may make an individual more attractive to recruiting firms. Further, this study moves beyond the current focus in the board literature on the impact of board composition, leadership structure, and interlocking ties, to show that network and network structural position can act as antecedents to drive the director selection process.

Third, this study contributes to social network theory by applying it in a corporate governance context. Different from the previous network-context studies, which have used either a firm-level network to predict firm-level outcomes or used an employee network to predict employee- or team-level outcomes (Howard, Withers, & Tihanyi, 2017; Li et al., In press), this study considers the social network at the individual director level to predict director selection. Directors are individuals who are involved in higher-level managing activities, and thus their networks are perceived to have higher status, more social capital considerations and a higher level of power dynamics (Carpenter & Westphal, 2001; Shani & Westphal, 2016; Westphal, 1998; Westphal & Stern, 2007), which may make their network significantly different from both the corporate network and the general employee network. In addition, going beyond the current network studies, which usually focus on innovative outcomes (Fleming, Ming, & Chen, 2007; Grigoriou & Rothaermel, 2017; Li et al., in press; Mazzola, Perrone, & Kamuriwo, 2016; Patel, Fernhaber, McDougall-Covin, & van der Have, 2014; Sosa, 2011; Uzzi & Spiro, 2005), this study explores how network structures can affect tie formation (i.e., director selection). By applying social network theory in this relatively new context with regard to the new outcomes, this study expands the application range of social network theory. In addition, this study examines the interaction effect of individual- and firm-level characteristics to explore the heterogeneity of network nodes. Given that two structural equivalent nodes may have different individual- and corporate-level characteristics, this study expands the structural equivalence condition of conventional social network theory by providing empirical evidence about the contingency impacts of individual-level and firm-level heterogeneity on director selection

1.2. Introduction for study 2

Why do directors leave their current boards? Director exit is beginning to receive more research attention (Boivie et al., 2012; Harrison et al., in press). As a major corporate governance mechanism, the board of directors is believed to monitor CEOs to reduce agency costs and to gain resources to reduce firm external uncertainties (Fama, 1980; Fama & Jensen, 1983a, b; Hillman & Dalziel, 2003; Johnson et al., 1996; Pfeffer & Salancik, 1978; Zahra & Pearce, 1989). Given the importance of their boards of directors, corporations may want to keep valuable directors to maintain their human capital. Therefore, sufficient knowledge on the antecedents of director exit becomes critical so that companies can develop effective policies to retain their current directors.

The current director exit studies mainly focus on how significant negative events such as bankruptcies or financial restatement affect director exit (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Marcel & Cowen, 2014; Withers et al., 2012a). However, director exit can also occur during non-crisis periods (Boivie et al., 2012). A notable limitation in this stream of research is that the other drivers of director exit in a non-crisis period are ignored. Only one recent study attempts to address the issue whereby a director may exit from a board when the directorship fails to meet his or her personal benefit requirements (Boivie et al., 2012). Building on this study, I explore other potential antecedents of director exit from a social network perspective. Specifically, I examine how each director's network position may affect his or her likelihood of exiting from a current board.

Both scholars and practitioners have long argued that directors stay on boards to expand their social network and gain social capital, which may help them to achieve future career success (Boivie, Graffin, Oliver, & Withers, 2016b; Lorsch, 2012; Lorsch & MacIver, 1989; Westphal & Stern, 2007). As a result, directors may be motivated to stay on multiple boards and thereby explore new board opportunities (Lorsch & MacIver, 1989). However, the board research has also suggested that directors suffer from personal information processing barriers such as time, cognitive, and capability constraints (Boivie et al., 2016a; Khanna et al., 2014). These personal constraints, together with the increasing complexity associated with board roles, may prevent directors from staying on too many boards (Lorsch, 2012). In addition, evidence in finance research has shown that firms with busy boards, those in which a majority of outside directors hold three or more directorships, are associated with weak corporate governance (Fich & Shivdasani, 2006). In fact, facing these competing situations, directors may have to change their current directorship portfolio to maximize their social capital gain. Specifically, I argue that directors may exit from certain boards to focus on others or replace certain current directorships with new board opportunities.

However, not every director is able to and wants to make an exit decision. I argue that only directors with greater access to board relevant information and relatively higher power compared to other directors are able to effectively identify and obtain other board opportunities and thus make the decision to exit from certain current boards. Social network theory suggests that network nodes can obtain information and power benefits from occupying superior network structural positions (Burt, 2000, 2001, 2004, 2007a;

Burt, 2007b; Burt et al., 2000; Freeman, 1977; Ibarra, 1993; Ibarra & Andrews, 1993; Mahmood et al., 2011). Applying this network structural argument to director exit, I argue that directors occupying superior network positions have greater access to board relevant information and relatively higher power compared to other directors, and they are thus more likely to exit from an existing board to pursue other, better opportunities. Specifically, this study provides fresh insight to argue that directors who occupy brokerage or central positions in an interlock network may become more likely to exit from their current boards.

Social network theory also suffers from its own limitations. Network structure arguments were originally developed to explain egocentric networks (Burt, 1979, 1980b, 1992; Granovetter, 1973). Although it has been applied to global networks, network structure arguments fail to address the non-structure heterogeneity of each network node (Burt, 1978). In other words, two directors who occupy the same structural position are believed to enjoy the same network benefits and thus may have similar outcomes. Such structural equivalence assumptions ignore the heterogeneity among individual directors and the heterogeneity of their current companies (Burt, 1987; Hanneman & Riddle, 2005; Mizruchi, 1993; Walker, 1985; Zaheer et al., 2010). The corporate governance research has widely established the fact that both individual attributes and company characteristics can significantly affect director-level outcome (Withers et al., 2012b). To overcome this limitation, I further explore the moderating effect of director gender at the individual level and current firm performance at the director-company level to add some heterogeneities into my network structure argument. Specifically, female directors are less likely to make an exit decision compared with their male colleagues even when they have occupied either central or brokerage positions. In addition, directors are less likely to exit from firms that have excellent performance even when the directors have occupied either central or brokerage positions.

This study makes three major contributions. First, it contributes to the director exit literature by introducing social network theory to the director exit research. Going beyond the focus of the current director exit research, which mainly addresses the positive impacts of negative events on director exit at the firm-level, this study, as one of very few studies, explores how individual attributes may affect director exit in non-crisis periods (Arthaud-Day et al., 2006; Boivie et al., 2012; Daily & Dalton, 1995; Harrison et al., in press; Marcel & Cowen, 2014; Withers et al., 2012a). Specifically, this study is the first to examine how directors' individual-level network positions may affect their decision to exit from current boards. Further, this study explores how gender as an individual-level contingency and firm performance as a firm-level contingency may affect directors' exit decision when occupying central or brokerage positions. Together, these findings offer more complete knowledge of director exit by adding individual- and firm-level heterogeneity into the network structure arguments.

Second, this study joins the debate addressing whether director exits are mainly involuntary (Boivie et al., 2012; Srinivasan, 2005). A large stream of the existing research has assumed that most director exits are involuntary and thus occur concurrent with negative events (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Marcel & Cowen, 2014). Very few studies argue that the majority of director exits are either voluntary or based on mutual consent (Boivie et al., 2012; Harrison et al., In press; Withers, Corley, & Hillman, 2013). Contributing to the second stream of research, this study argues that director exits can be not only voluntary but also tools adopted by informative directors (i.e., directors who occupy brokerage or central positions) to manage their directorship portfolio and increase their potential gain of social capital during non-crisis periods. Providing new evidence to support the notion that director exits are mainly voluntary, this study also opens up more opportunities for theorizing and examining how directors may leverage their exit as an effective approach to achieving personal benefits. In addition, this study provides indications for companies that may want to retain their current directors. By leveraging my conclusions, companies may be able to develop better human resource management policies.

Third, this study expands social network theory by applying social network theory in a corporate governance context. Different from the previous network context, which leverages a firm-level network to explore firm-level outcomes, this study examines how director-level network attributes can affect the director-level outcome (Ahuja, 2000; El-Khatib et al., 2015; Jiang et al., 2018; Martin et al., 2015; Reinecke & Ansari, 2015). The board of directors is at the top of a firm's governance hierarchy. Therefore, the director network can be characterized as an elite context (Burt, 1979; Mariolis, 1975). In addition, director-level output is relatively distinct from typical firm-level network output such as performance and innovation (Ahuja, 2000; Ahuja & Carley, 1999; Fleming et al., 2007; Yayavaram & Ahuja, 2008; Zaheer & Bell, 2005). Instead, at an individual level, directors may be more concerned about personal benefits and career development (Westphal & Stern, 2006, 2007). This makes my setting different from other firm and general individual-level network settings. By applying social network theory in this context, this study expands the application range of social network theory and provides new insights into potential network outcomes. Further, this dissertation examines the interaction effect of individual- and firm-level characteristics and thus adds node-level heterogeneity to network arguments.

1.3. Introduction for Study 3

How do directors move on their job market? What are directors' potential career paths? These questions remain unanswered in the field of corporate governance. However, without an understanding of director mobility, companies can hardly develop effective policies to attract and retain valuable directors, and thus they may suffer from difficulties in maintaining board effectiveness. To address this important gap, this study is designed to explore director mobility. The current research on director mobility has addressed either the selection side or the exit side.

The existing director selection research has mainly shown that directors with certain valuable attributes, such as higher social capital, special expertise and being a minority, are more likely to be selected by companies (Cashman et al., 2013; Keys & Li, 2005; Kim & Cannella, 2008c). In terms of director exit, a majority of the existing research has emphasized that a significant negative event, including financial restatement, negative media coverage or organizational failure, can lead to director exit (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Harrison et al., in press; Marcel & Cowen, 2014; Withers et al., 2012a). Given the limited number of studies on director selection and director exit, it is be reasonable to note that both streams of research suffer from some negligence. First, the current research on director selection has mainly taken the employer's perspective (Westphal & Stern, 2006; Zhu & Chen, 2015b). Although companies do have greater power in director selection compared to directors, director selection is still a double-sided selection process. Individual directors also have their own considerations and may enjoy some freedoms to select companies when accepting board offers. Therefore, switching the focus to individual directors may provide some fresh and valuable knowledge. Second, a majority of the current director exit studies has ignored the fact that director exit can occur in a non-crisis period (Boivie et al., 2012). A director may want to leave when he or she must overcome certain constraints, e.g., limited time and capabilities, or to save time and attention to better pursue other opportunities (Boivie et al., 2016a; Boivie et al., 2012). More importantly, there is no known link between director selection and director exit that offers both scholars and practitioners a complete picture about how directors make decisions. To address all of the above gaps, this study explores how directors make decisions by identifying the types of company to which directors may move when they have exited from prior boards.

It is widely believed that directors are motivated to serve on boards because it can expand their network, increase their social capital, and help them achieve future career success (Boivie et al., 2016b; Lorsch, 2012; Lorsch & MacIver, 1989; Westphal & Stern, 2007). Without other constraints, directors may be motivated to serve on numerus boards. However, directors' personal information processing barriers and constraints, such as time, cognitive capacity, and capabilities together with the increasing complexity associated with board roles prevent them from staying on too many boards simultaneously (Boivie et al., 2016a; Boivie et al., 2012; Lorsch, 2012). Integrating both arguments, this paper theorize that directors may strategically arrange their directorship portfolio so that they can maximize their gain of social capital with limited time and capabilities. Specifically, directors who have exited from prior boards may want to move to companies that allow them to reconstitute ties with members on their prior boards and enable them to gain new social capital.

Different individuals may also have their own way of making decisions, especially when different contingencies are applied (Boivie et al., 2012; Finkelstein & Hambrick, 1990; Hambrick & Mason, 1984). To provide a more realistic understanding of director mobility, this study also explores two contingencies to add network and individual heterogeneity at the individual level into the director mobility framework. Specifically, this study argues that when a focal director has multiple ties to directors from his or her prior board, he or she is less likely to reconstitute another tie with directors from that prior board, whereas he or she is more likely to accept an offer from a board consisting of more new network contacts. Further, when a director is female, she is more likely to reconstitute a tie with directors from her prior board, whereas she is less likely to join a board whose directors are all fresh to her network.

To test my conceptual framework, I adopted simulation investigation for empirical network analysis (SINEA) to better account for the network dependency and individual and corporate heterogeneity at a dyadic level (Kim et al., 2016). This particular social network analysis specifically allows me to construct both a director-level interlock network and a director-company bipartite network, and thus enables me to explore the detailed dynamics of director mobility while simultaneously modeling individual-level heterogeneities to largely overcome the structural equivalence problem in traditional network analysis and measures. By adopting this new approach, this study is able to provide more accurate and complete knowledge on director mobility.

This study makes several contributions. First, it contributes to the director selection research by taking a director's perspective to study selection. Going beyond the current director selection studies, which mainly focus on how companies and boards select directors (Withers et al., 2012b), this study, as one of the very few studies that does so, explores how individual directors select their next board after exiting from prior boards. This switch of view enables us to explore a different understanding of the director selection process and thus provides a more complete understanding of director selection.

Second, this study contributes to the director exit literature by introducing another possibility of voluntary director exit (Boivie et al., 2012; Srinivasan, 2005). A large stream of the existing research has assumed that most director exits occur as a response to negative events (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Marcel & Cowen, 2014). By exploring the next possible directorship after a director exit, this study shows that director exits can also be a tool adopted by directors to maximize the gain of social capital at non-crisis periods when facing limited time, capabilities and other personal constraints. As a result, this study introduces the idea that director exit can be adopted as an effective tool and thus shed light on future director selection research.

Third, this study contributes to the director mobility and director labor market literatures by exploring where directors move when they exit from prior boards. As one of the pioneer studies to integrate director exit and director selection to explore the moving path of individual directors, this study discloses how directors' intention to retain and increase social capital can affect their mobility in the director labor market. Further, this study examines the contingency effect of existing ties between focal directors and other directors based on their prior board and gender. Together, these findings offer informative new insights into director mobility.

Fourth, this study makes a significant empirical contribution by adopting RSIENA to test the conceptual framework. Compared with conventional analysis, RSIENA enables a further exploration of dyadic-level heterogeneity (Kim et al., 2016). Therefore, this study is able to examine director mobility at the individual level to predict new tie formation. In other words, this study is able to examine whether a specific individual is more likely to move to another specific company. By adopting this analysis, this study provides a more solid micro-foundation of the proposed framework, and it introduces a new method for conducting corporate governance research.

2. THEORY AND HYPOTHESES

Given the significant role of boards in corporate governance, management scholars have paid a great deal attention in studying the functions of boards (Hillman & Dalziel, 2003; Johnson, Daily, & Ellstrand, 1996; Zahra & Pearce, 1989). Building upon an agency perspective, boards of directors are believed to serve as a critical control mechanism to monitor the actions of executives on behalf of shareholders (Fama, 1980; Fama & Jensen, 1983a, b). Along this stream of research, studies focus on the structure of boards to suggest that the appointment of independent directors and the separation of the board chair and CEO positions will help managers make better decisions and thus increase firm performance (for a review, see Withers et al., 2012b). Although the current empirical evidence fails to fully support this argument (Dalton et al., 1998; Dalton et al., 1999; Ellstrand, Daily, Johnson, & Dalton, 1999), this monitoring perspective is still of crucial importance in the corporate governance literature, and it has been taken for granted by practitioners (Boivie, Bednar, Aguilera, & Andrus, 2016a).

With the exception of the agency perspective, the resource dependence perspective was introduced into governance literature to understand some of the non-monitoring functions of boards (Pfeffer & Salancik, 1978). Resource dependence theory is a broad theory that identifies how managers seek to reduce environmental uncertainty and dependence through multiple approaches; corporate governance scholars usually focus on the resource provision role of boards to suggest that by having directors who have access to or are linked to critical resource providers, companies can better manage their resource dependence relationship with resource providers (Hillman et al., 2009;

Pfeffer & Salancik, 1978). The research has shown that linking to key resources through interlocking directors can increase firm capability to adapt to and manage external uncertainties (Hillman, Cannella, & Paetzold, 2000; Pfeffer, 1972, 1973; Pfeffer & Salancik, 1978). For example, by having ex-politicians on a board, companies can reduce uncertainty and gain access to information, legitimacy, and/or resources (Hillman, 2005). Companies suffering from a compromised reputation may obtain a buffering effect by having minority directors (Hafsi & Turgut, 2013). Firms also aim to form interlock ties as a means to manage their knowledge dependence (Howard et al., 2017). Given the importance of crucial resources, companies are also more likely to reconstitute broken ties with the partners on which they depend (Westphal, Boivie, & Chng, 2006).

To integrate with the resource dependence perspective, Hillman and Dalziel (2003) present the concept of board capital to suggest that directors can provide both human capital and social capital to enhance their monitoring and resource provision roles. Human capital is defined as an individual's skills, knowledge, expertise, and experiences (Becker, 1964; Hillman & Dalziel, 2003; Hogan & McPheters, 1980; Schultz, 1961), whereas social capital is defined as "the sum of actual and potential resources embedded within, available through, and derived from, the network of relationships possessed by that individual" (Hillman & Dalziel, 2003; Nahapiet & Ghoshal, 1998: 243). The research has shown that board human capital can affect CEO selection, firm growth, CEO power, and firm competitive advantages (Haynes & Hillman, 2010; Khanna, Jones, & Boivie, 2014; Kor & Sundaramurthy, 2009; Krause et al., 2013; Tian, Haleblian, & Rajagopalan, 2011). Similarly, board social capital can have salient impacts on significant company outcomes, including inventor decision making, firm performance, and director interactions within the boardroom (Brown, Anderson, Salas, & Ward, 2017; Sauerwald, Lin, & Peng, 2016; Westphal, 1999).

However, boards of directors cannot offer effective resource and monitoring to companies at no cost. At the firm level, finance and accounting scholars have shown that busy boards, which are boards with majority of outside directors who hold multiple directorships, can lead to weak corporate governance and lower performance (Fich & Shivdasani, 2006). Taking a board/director perspective, a recent information process perspective views boards as a mechanism to process information for the company (Boivie et al., 2016a; Khanna et al., 2014). This view suggests that boards may encounter a series of information process barriers, such as director cognitive bias and individual time constraints, which affect their capability to process information and thus become ineffective in monitoring and resource provision (Boivie et al., 2016a). This argument suggests that firms must carefully select directors to obtain boards that can perform well in both monitoring and resource provision. For individuals, this perspective suggests that, given that individual directors may suffer from personal information processing barriers such as time and capability constraints, they may only be able to sit on a limited number of boards (Boivie et al., 2016a). As a result, directors must carefully design their directorship portfolio to maximize their opportunities to improve their personal human and social capital.

Social network theory has suggested that networks can affect the accumulation of social capital (Coleman, 1988, 1990), information and knowledge (Granovetter, 1973, 1985; Powell, 1990)(Granovetter. 1973,1985; Powell, 1990), and intellectual human capital (Nahapiet & Ghoshal, 1998; Powell, Koput, & Smith-Doerr, 1996). The social network research has two main focuses. The first stream of network research focuses on the network relational perspective to study actors and the relationships that connect or divide them (Benson, 1975; Burt, 1980a; Ebadi & Utterback, 1984; Lincoln & Miller, 1979). Typical research topics include the antecedents and outcomes of network ties, such as the characteristics and strength of relational ties (Granovetter, 1973) and relational embeddedness (Granovetter, 1985; Uzzi, 1996). At an organizational level, the empirical research has shown that having network ties can enable imitation and practice diffusion (Beckman & Haunschild, 2002; Haunschild, 1993; Haunschild & Miner, 1997). In addition, tie strength can increase adaptation and learning by mitigating uncertainty (Hansen, 1999; Kraatz, 1998). Further, relational embeddedness is shown to influence organizational outcomes such as alliance formation and performance, firm financial performance, and knowledge transfer (Gulati, 1998; Ingram & Roberts, 2000; Uzzi & Gillespie, 2002). At the individual level, the research has found that CEO candidates who have relational ties with the current CEO are more likely to be appointed as the future CEO (Wiersema, Nishimura, & Suzuki, 2018). Tie strength is shown to affect how individuals process non-redundant knowledge (Perry-Smith, 2014). Similar to its effect at the organizational level, relational embeddedness can also affect bank managers' knowledge transfer and learning (Uzzi & Lancaster, 2003).

The second stream of network studies focuses on the structure of networks to consider the impacts of network structures and patterns. In particular, the structural perspective has studied how an actor's advantageous network structural position can help that actor to obtain important information, status, and resources (Brass, Galaskiewicz, Greve, & Tsai, 2004; Kilduff & Brass, 2010). Advantageous positions, including central positions, brokerage positions, and a moderate level of network clusters, are believed to be associated with better access to resources and information, higher status and power, which can provide focal actors better opportunities to develop a variety of capabilities (Brass, 1992; Brass & Burkhardt, 1992; Burt, 1980b, 1992; Freeman, 1977). In accordance with this stream of work, the empirical findings at both the organizational and individual levels have shown that network centralities are associated with better innovative capability development (Ibarra, 1993; Ibarra & Andrews, 1993; Mahmood, Zhu, & Zajac, 2011). Brokerage is another important network position (Burt, 1992; Freeman, 1977). Brokers can bridge other non-connected network actors and can thus allow the broker actor to obtain more diversified and non-redundant information (Burt, 1992, 1997; Freeman, 1977; Hanneman & Riddle, 2005; Reagans & McEvily, 2003). At the organizational level, a brokerage position has been shown to have a significant influence on innovation and organizational alliance behavior (Ahuja, 2000; Jiang, Xia, Cannella, & Xiao, 2018; Reinecke & Ansari, 2015). At the individual level, a brokerage position can also affect the focal actor's creativity and search behavior (Li et al., In press; Paruchuri & Awate, 2017).

As the relationship perspective has emphasized the importance of ties and relationships with the surrounding nodes, conceptually, it can address the heterogeneity of the relationships among different sets of actors (Granovetter, 1985; Uzzi, 1996). However, the structural perspective focuses on patterns instead of specific ties, and it thus suffers from the so-called the structural equivalence problem (Burt, 1987; Mizruchi, 1993). Structural equivalence is a fundamental assumption of the structural perspective that treats different network actors and relationships with similar network structures as homogenous (Kilduff & Brass, 2010). For example, two nodes with the same network structure, e.g., the same level of centrality, are understood to have a similar effect on outcomes of interest. To overcome the structural equivalence problem and to address actor and relational heterogeneity when studying a network structure, some of the recent research has adopted advanced methods such as exponential random graph models (ERGMs) and simulation investigation for empirical network analysis (SIENA) to model the dyadic and node-level network structure of individual nodes (Howard et al., 2017; Kim, Howard, Cox Pahnke, & Boeker, 2016).

2.1. Theory and Hypothesis for Study 1

2.1.1. Director selection

The above discussion on board function makes a clear point that companies are motivated to select directors who can better realize their monitoring and resource provision role, and who suffer from fewer information processing barriers. However, the question of how to locate and select such directors remains. Although much work has been done to explore the impacts of different board compositions and board structures, the studies do not explore how network structure can affect the selection outcome at an individual director level (Withers et al., 2012b).

Some of the existing director selection studies take a firm perspective to explore how certain characteristics of individual directors are preferred by selecting companies. For example, the research has shown that after a takeover, professional independent directors (i.e., independent directors who have multiple board seats) are three times more likely to be appointed than other directors (Keys & Li, 2005) because professional independent directors have higher general human capital, which can help them better process relevant information and provide advice to their firms. In addition, directors who have more connections are valued in the marketplace (Cashman, Gillan, & Whitby, 2013; Kim & Cannella, 2008b) because firms believe that widely connected directors can better realize their resource provision role. Further, a firm may want to have certain types of directors to gain legitimacy. For example, Gregorič, Oxelheim, Randøy, and Thomsen (2017) found that the social pressure on firms with regard to gender equality positively affects their appointment of female directors. Similarly, firms have also been found to engage in impression and reputation management by appointing minority directors and independent directors (Westphal & Graebner, 2010).

Other director selection studies take an individual perspective to explore how socio-political factors may affect the director selection process. For example, Westphal and colleagues showed that social factors, including interpersonal interaction and sharing a similar functional background with directors with higher status and having a similar background with someone with whom the directors/CEOs have previously worked, may lead to an individual additional board appointment (Westphal & Shani, 2016; Westphal & Stern, 2006, 2007; Westphal & Zajac, 1995; Zhu & Westphal, 2014). Similarly, Zhu and Chen (2015b) suggested that narcissistic CEOs may be involved in the director selection and are more likely to choose directors who also have a narcissistic tendency or have prior experience with other similarly narcissistic CEOs.

Both streams of the director selection research play an important role in exploring the director selection process. However, given the complexity of the director selection process, our knowledge about director selection is limited. With the aim of providing a better understanding of director selection, this study mainly takes a firm perspective. I believe that although director selection is a two-way selection process, firms are usually the party with relatively higher power. Thus, although it may not be the firm's first choice, the final selection outcome must be a result recognized by the firm. Therefore, by taking a firm perspective, this study can better explore the structure of a director-level network that can make an individual more attractive to recruiting firms.

2.1.2. Social network theory and board of directors

From the literature review on the director selection literature, it is very interesting to note that both streams on director selection have addressed the fact that social network factors, including directors' overall social connections and certain types of ties to a particular person or organization, may affect whether an individual director will obtain an additional board appointment. Social network theory by nature serves as an effective framework with which to address selection problems because people view someone within their own network as an in-group member with whom they share a high level of similarity, and in-group or in-network members are usually more visible (Burris, 2005). Empirically, both firms and individuals have been shown to prefer selecting similar or familiar others with whom to either work or to imitate. For example, at the organizational level, Mizruchi (1989) has shown that firms with similarities in terms of industry, the geographical proximity of headquarter locations, market constraints, and common relationships with financial institutions exhibit common political behavior. Gulati and Westphal (1999) have found that interlock ties between two firms will increase the likelihood of subsequent alliance formation between them when the CEO-board relationships are cooperative in strategic decision making. At the board and individual levels, Westphal and Graebner (2010) show that when facing external pressures, CEOs and directors tend to increase formal board independence by selecting outside directors within their network. Boivie, Bednar, and Barker (2015) also find that directors tend to select their interlocking partners as a target of comparison when deciding their own compensation.

In addition, social network theory can also effectively address issues with boards of directors because it can address the accumulation and execution of social capital, human capital and information capital, which are closely related to the board monitoring function, resource provision functions, and the information processing function (Boivie et al., 2016a; Coleman, 1988; Freeman, 1979; Hillman & Dalziel, 2003; Walker, Kogut, & Shan, 1997; Zukin & DiMaggio, 1990). For example, network size measured by degree centrality has long been adopted as a measure of social capital, while network centrality measured by eigenvector centrality is employed to determine proxy power and status (Benjamin & Podolny, 1999; Bonacich, 1987, 2007; Podolny, 2001; Shipilov & Li, 2008). Network brokerage and centrality are shown to have control and information benefits at both the individual and organizational levels (Burt, 2004; Li et al., In press; Mazzola et al., 2016; Paruchuri, 2010; Wang, Rodan, Fruin, & Xu, 2014; Whittington, Owen-Smith, & Powell, 2009)

However, until now, only a few studies have adopted social network theory to study board and director outcomes (Chu & Davis, 2016). The majority of the current interlock research focuses on exploring how network/interlock networks affect firm-level outcomes (Martin, Gözübüyük, & Becerra, 2015; Sauerwald et al., 2016; Shipilov et al., 2017; Shipilov, Greve, & Rowley, 2010; Shipilov & Li, 2008). Within those limited studies that adopt the network perspective to study board and director outcomes, the majority take the relational perspective to explore the impact of ties (Westphal & Shani, 2016; Westphal & Stern, 2006; Zhu & Westphal, 2014). For example, the research has shown that the relational embeddedness of a focal director can affect his or her decision making (Jiang, Cannella, & Jiao, 2017a; Jiang et al., 2017b). However, the network structure, especially the structural aspects of an interlock network established by interlocking directors, remains under-studied in the field of boards of directors, and particularly in the field of director selection (Kim & Cannella, 2008a; Wiersema et al., 2018). Given the salient impacts of the structural perspective and its significant outcomes discussed above, the structural perspective may have particular importance for director selection.

Another constraint with regard to the current director network studies is the level of analyses. Although social network theory allows for multiple level of networks (Kilduff & Brass, 2010), the majority of the current interlocking director studies remain on the company level (e.g. Howard et al., 2017; Martin et al., 2015; Zheng, Singh, & Mitchell, 2015; Zhu & Chen, 2015a). However, the existing board research has suggested that individual directors are heterogenous and that personal characteristics are significant and distinct (Boivie et al., 2012; Khanna et al., 2014). The broader social network research also suggests the relevance of individual actors' networks (for a recent review, see Kilduff & Brass, 2010). As a result, more attention should be paid to a director's individual level network structure and its effects. This is particularly true in the director selection setting because director selection refers to the selection of individual directors. To overcome the above constraints and provide a greater understanding of director selection, this study will explore how the director-level network structure may affect the director selection outcome.

2.1.3. Network structural position and director selection

As shown by the brief discussion above, the network research has convincingly demonstrated that superior network structural positions, including central positions and brokerage positions, can provide information and power benefits to the focal actor (Bonacich, 1987; Borgatti & Foster, 2003; Burt, 1992, 2004, 2007a; Freeman, 1978, 1979; Kilduff & Brass, 2010; Provan, Fish, & Sydow, 2007). Such information and power benefits have been shown to affect a wide range of significant individual- and firm-level outcomes including firm performance and individual career success (Fang et al., 2015; Shipilov et al., 2017). Building on those findings, I argue that organizations may tend to appoint directors who have already occupied those superior network positions for the following reasons.

First, organizations are well aware of the power and information benefits associated with those superior network positions and thus may intentionally search for individuals who enjoy such benefits (Aharonson, Tzabbar, & Amburgey, 2016). By having directors who occupy those superior network positions, organization can leverage those directors' information and power benefits (Ozdemir, Moran, Zhong, & Bliemel, 2016). Specifically, by having directors who occupy superior network positions and thus have higher director capital, organizations may be able to expect better monitoring and more resource provision (Hillman & Dalziel, 2003). Second, when appointing directors, organizations are more likely to select certain individuals because they are highly visible and thus more likely to be noticed (Boivie et al., 2015). By occupying superior network positions, individual directors make themselves highly visible, and they are thus more likely to be selected by recruiting companies. In the following sections, I will discuss how those two criteria works for individuals who have high centrality and who are network brokers.

Centrality

Organizations in general want directors who can better realize their board role, i.e., provide effective monitoring and valuable resources to reduce their uncertainty (Hillman & Dalziel, 2003; Hillman et al., 2009). I argue that central directors are more likely to offer effective monitoring compared with non-central directors. Social network theory suggests that individuals who are central in networks are widely believed to benefit from higher status, higher levels of power, richer transfers of information, and greater problem-solving capabilities (Kilduff & Brass, 2010). Given that an interlock network is also a type of individual-level social network, a central director within his or her interlock network can also enjoy information benefits, power and status benefits, and opportunity benefits (Kilduff, Crossland, Tsai, & Bowers, 2016; Martin et al., 2015).

The information benefits associated with centrality are defined in terms of a situation in which a central director can obtain richer information within a shorter period of time at lower costs (Perry-Smith & Shalley, 2003). By having information benefits, a central director has more access to information and can thus perform social comparison or benchmarking with other great firms or great practices to develop better monitoring procedures (Wang, Gupta, & Grewal, 2017). Opportunity and information benefits can also enable a central director to become better informed about the current deficiencies of managerial practices and thus discover potential new and innovative monitoring procedures (El-Khatib, Fogel, & Jandik, 2015). The power and status benefits associated with high centrality refer to a situation in which a central director usually has greater network influence over other network partners (Bonacich, 1987; Freeman, 1978, 1979). Opportunity benefits enable a central director to discover new opportunities earlier than the other directors (Larcker, So, & Wang, 2011; Stuart & Sorenson, 2007). The power and opportunity benefits that are embedded in the central position can further help a central director to better discover new opportunities of monitoring and better implement his or her monitoring practice (Brass, Butterfield, & Skaggs, 1998). As recruiting firms are also very likely to understand these issues, they may want to have a central director on their board to reduce agency costs and perform effective monitoring.

Being a central director also enables the focal director to provide more and better resources to his or her home company and the company where he or she is a director. By having a richer stock of knowledge and information and being more capable of recognizing and approaching new opportunities (El-Khatib et al., 2015), a central director may also be more capable of providing better advice and discovering and locating useful information and resources. Simply put, the information and opportunity benefits associated with centrality can help a firm make better decisions and become more innovative. In addition, a central director is more likely to have the power not only to obtain the information and resources he or she has discovered but also to be able to leverage his or her status to make better use of those resource (Kleinbaum & Stuart, 2013; Larcker et al., 2011; Martin et al., 2015). As a result, a central director will be an effective resource provider and user and may thus be preferred by recruiting companies. Further, by having a central director, a company is able to leverage a central director' s network power and status to increase its own reputation and status and thus make the firm more likely to manage external uncertainties, which ultimately leads to competitive advantages (Kleinbaum & Stuart, 2013; Larcker et al., 2011; Love, Lim, & Bednar, 2017; Martin et al., 2015). Given that companies understand the importance of the board resource provision role and seek directors who can provide them with greater resources and help them manage external uncertainty (Krause et al., 2013), central directors are more likely to be selected by recruiting companies.

Companies may also expect a central director to better overcome information processing bias, including cognitive bias, time constraints, and relational dynamics. Given that a central director can accumulate more information within a shorter period of time (Perry-Smith & Shalley, 2003), he or she should have relatively more time to analyze and absorb the information received. By absorbing more information, a central director should be more likely to build a less biased view, develop personal capability and interpersonal skills, and make more informed decisions (Venkataramani, Richter, & Clarke, 2014). By appointing such a central director, the recruiting company should obtain an effective director who suffers from fewer information processing barriers.

Further, a central director is also more likely to be identified by selecting firms because he or she is usually better known (Kim & Cannella, 2008c). For example, central directors are more likely to be covered by the media (Malinick, Tindall, & Diani, 2013) or recommended by co-workers because of their higher status and capability. To conclude, a central director in a director interlock network is more likely to obtain additional board appointments. Therefore, the following is proposed:

Hypothesis 1: a director's network centrality is positively associated with his or her possibility of obtaining subsequent additional board appointments.

Brokerage

Brokerage position, which is defined as a network position that can bridge diverse and disconnected actors, is another widely recognized superior network position (Burt, 1980b, 1992; Freeman, 1977). Network brokers enjoy information and vision benefits because they have access to non-overlapping streams of information (Burt, 1980b, 1992, 2000, 2004; Obstfeld, Borgatti, & Davis, 2014). The empirical evidence has suggested that at both the individual and organizational levels, brokers tend to perform better; receive higher salaries, faster promotions, and higher bonuses (Burt, 2007a; Burt, Hogarth, & Michaud, 2000; Fleming & Waguespack, 2007; Li et al., In press; Obstfeld et al., 2014; Reinecke & Ansari, 2015). In addition, brokers enjoy power and control benefits because they are the only channel to exchange information flow for two unconnected parties, and thus, they have the power to decide whether to bring together unconnected parties, and thus their opinions have greater influence (Burt, 2004, 2007a). Given that companies can leverage diversified information and control power to create value and reduce uncertainty, they may also tend to appoint directors who occupy a brokerage position (Martin et al., 2015; Shropshire, 2010).

First, by having a broker director on a board, an organization may be able to obtain a better monitor. Similar to central directors, directors who are network brokers can enjoy network information benefits (Fleming et al., 2007). However, central directors' information benefits come from the fact that they are well-connected and thus have more access to information, whereas network brokers' information benefits are obtained by tying to diversified disconnected individuals (Li et al., In press). By tying to diversified disconnected individuals, brokers can gain privileged access to diversified and non-redundant information (Burt, 2004). This valuable information enables broker directors to create a unique and innovative combination of information, which can help them develop better monitoring procedures and routines and discover new monitoring opportunities. As a result, companies may want to have network brokers on their board for monitoring purposes.

In addition, by having network brokers on their boards, companies can obtain more resources and be better able to manage external uncertainties. By absorbing diversified and non-redundant information, network brokers can develop more innovative advice and identify novel resources to better fulfill their resource provision role (Hoang & Antoncic, 2003). In addition, network brokers enjoy control power over their direct contacts who reply on the brokers to obtain information (Burt, 2007b). By having network brokers on their board, companies can leverage such control and power benefits to better develop external relationships with those direct contacts (i.e., other directors) and their organizations. As a result, by having network brokers on a board, focal companies can gain power and status over their interlock partners and thus reduce external uncertainties. Further, diversified and non-redundant information enable a network broker to develop a deeper understanding about governance practices without over-absorbing similar information; thus, they overcome the cognitive bias and time constraints of processing information (Harrison, Price, Gavin, & Florey, 2002). Last, but not least, given network brokers' power and information benefits, they are also very visible and easily noticed by recruiting companies. Therefore, the following is proposed:

Hypothesis 2: a director's network brokerage is positively associated with his or her possibility of obtaining additional board appointments.

2.1.4. Gender as an individual-level contingency

As discussed above, firms may select directors based on the candidates' network position. However, firms may need to make a selection decision when two individuals have similar network structural positions. Although social network theory assumes structural equivalence, which suggests that two network actors who occupy the same network structural position enjoy the same network benefits, recruiting firms must still consider the heterogeneity of those two actors because two director candidates can be very different in terms of their personal attributes (Mizruchi, 1993; Walker, 1985; Westphal & Shani, 2016). Given that the CEO and top management team research has suggested that personal attributes can affect managers' decision making, and the fact that the board research has shown that an aggregation of personal attributes at the board level can influence board decision making, it is necessary to explore how different director attributes can moderate the relationship between network structural position and selection outcome (Boivie et al., 2012; Graffin, Boivie, & Carpenter, 2013; Lange, Boivie, & Westphal, 2015; Westphal et al., 2006).

Individuals can have multiple personal attributes. Among all such attributes, gender is one of the most widely studied and has been shown to significantly affect the treatment an individual may receive (Chen et al., 2016; Lyngsie & Foss, 2017; Shan, Fu, & Zheng, 2017). In the management field, much attention has been paid to gender diversity, especially gender diversity in boards or top management teams (Abdullah, Ismail, & Nachum, 2016; Chen et al., 2016; Post & Byron, 2015; Zhang & Qu, 2016). The research and surveys have suggested that women remain underrepresented at the top echelons of organizations (Chen et al., 2016; Gregorič et al., 2017). Specifically, according to the most recent survey from 2020 Women on Boards (2017) and a news report from Fortune website (2017), approximately 22 percent of directors are women in Fortune 500 companies, and only 24 CEOs are female.

However, the situation is changing. The evidence suggests that there is an increasing number of female representations on boards (2017). Further, Chu and Davis (2016) have suggested that female directors tend to be more central in their network. To explain this, the research has shown that female board representation is associated with better performance (Abdullah et al., 2016; Adams & Ferreira, 2009; Dezsö & Ross, 2012; Joshi, 2014; Joshi, Son, & Roh, 2015; Park & Westphal, 2013; Post & Byron, 2015; Zhang & Qu, 2016). Further, Hillman, Shropshire, and Cannella (2007) argue that organizations are seeking female directors to reduce external pressure for diversity and to increase legitimacy. Recently, Leslie, Manchester, and Dahm (2017) have shown that only high potential females can reverse the negative gender-treatment relationship and enjoy the premium of being female. Following these arguments, I argue that female directors, especially female directors who occupy an advantageous network position, will be popular in the director labor market. This popularity, together with the main effect of network structure, leads to an argument that if a key director, i.e., a central director or broker director, is female, she will be more likely to obtain an additional board appointment. Thus, the following is proposed:

H3: Being female positively moderates the relationship in H1; that is, when a central director is female, the positive relationship between centrality and additional board appointment becomes stronger.

H4: Being female positively moderates the relationship in H2; that is, when the broker director is female, the positive relationship between brokerage and additional board appointment becomes stronger.

2.1.5. Director's home firm performance as an organizational level contingency

In addition to individual-level contingencies, organizational-level characteristics may interact with network properties to affect director selection (Hillman et al., 2007). The financial performance of the director candidate's home firm can be a very important contingency. The past research has shown that poor performance is a major driver for CEO and director turnover, either voluntary or involuntary, because firm performance is a key metric that is used to evaluate CEO and director performance, and failing to meet performance expectations can lead to higher pressure for turnover (Arthaud-Day et al., 2006; Boivie et al., 2012; Daily & Dalton, 1995; Harrison et al., In press; Marcel & Cowen, 2014). This evidence indicates that external stakeholders view firm performance as an important indicator to reflect the capability of focal directors.

Given that recruiting companies want directors who can successfully leverage their network benefits to help their company (i.e., their home company and the companies where they serve on the board), it is very likely that those recruiting companies will use their home firm's performance as an evaluation criterion. Although there is no direct evidence of how home firm performance affect director selection, the research has shown that the recruiting firm will consider director candidates' previous work experience (Zhu & Chen, 2015a, b; Zhu, Shen, & Hillman, 2014; Zhu & Westphal, 2014). Therefore, when the financial performance of a director candidate's home company is relatively low, the recruiting company will notice it and may infer that the director's capability of leveraging his or her network benefits to help his or her home firm is limited. In such case, the recruiting company may question whether the candidate director could successfully leverage his or her network position benefits to help the recruiting firm. In addition, companies that are low in performance usually face many external challenges. By appointing directors from such companies, the recruiting companies may also face external challenges about their decision due to the potential negative reputational spillover. Given that lower performance also represents a higher risk of organizational failure, tying to a company with lower performance also increases the uncertainty and risks for recruiting companies. Those uncertainties and risks may cancel out the network benefits of the director candidates; thus, the recruiting company may no longer favor them. As a result, a recruiting firm may look for other director candidates who have a relatively similar network position but do not suffer from lower financial performance at their home company.

However, when the financial performance of a director candidate's home company is relatively high, the recruiting company is more likely to believe that the director candidate is capable of successfully leveraging his or her network benefits in helping his or her home companies. In addition, building a tie with a well-performing firm represents an opportunity to gain external resources and forge connections with powerful partners. Together, these factors strengthen the attractiveness of the focal director candidate's network benefits, thus making the recruiting company more likely to offer the focal director candidate the position. Therefore, the following is proposed:

H5: A director's home firm performance positively moderates the relationship in H1; that is, when a central director's home firm obtains higher performance, the positive relationship between director centrality and additional board appointment becomes stronger.

H6: A director's home firm performance positively moderates the relationship in H2; that is, when a broker director's home firm obtains higher performance, the positive relationship between director brokerage and additional board appointment becomes stronger.

2.1.6. Recruiting firm's network positions

Recruiting firm's network centrality

In addition to directors' network positions, recruiting firms' network positions should also affect director selection. As I proposed in Hypothesis 1, recruiting firms may be particularly interested in potential information and power benefits that a more central director candidate can bring in. However, recruiting firms' interests on high centrality individuals may become reduced when they already have high centrality. Specifically, when a recruiting firm occupies a more central position in its network, the firm may already be able to obtain external resources, discover opportunities and establish network structural power (Kilduff et al., 2016; Martin et al., 2015). Thus, compared to other recruiting firms which have a relatively less central position, this focal recruiting firm can have a reduced need to look for another central director. This should be true for two main reasons.

First of all, a central recruiting firm may have a reduced need on information benefits provided by a new central director because too much information can increase the information processing barriers faced by board members (Ahuja, 2000). It could be possible that the recruiting firm still emphasizes potential information and resources provided by each director candidate. However, when the recruiting firms already have lots of accesses to information and power, they are more likely to look for director candidates who may bring in heterogeneous information instead of individuals who can merely increase their connections to get information. Under this situation, the focal boards can become less interested in a director candidate who only has high network centrality. Therefore, director centrality is viewed less positively when the board already has centrality, because it is more redundant. The marginal benefits it provides will be smaller.

Second, a more central recruiting firm may have a reduced need for any power benefits provided by a new central director. When a recruiting firm has a higher level of network centrality in the interlock network, its board members are also able to have relatively higher power over other directors in the network. It is less necessary for the recruiting firm with high network structural power (i.e., centrality) to look for a director who also has high network structural power to further increase the network power and status of the focal firm. To the contrary, board members of a central firm may not want to hire another colleague who has higher network power and status because introducing an influential person may change the current power dynamics of the board and lead to further conflicts and competitions within the boardroom. For example, Acharya and Pollock (2013) found that when a prestigious board recruits new outside directors, its preexisting board prestige has a diminishing positive effect on selecting a prestigious director. Although Acharya and Pollock (2013)'s findings are on board status based on individual demographic and functional backgrounds, the fundamental psychological process of board members should remain the same. Therefore,

H7: A recruiting firm's centrality negatively moderates the relationship in H1; that is, when a recruiting firm has higher centrality, the positive relationship between director centrality and additional board appointments becomes weaker.

However, this may be a different case when a more central firm evaluates a director candidate who has more brokerage positions. I argue that a more central recruiting firm will be more likely to value director candidates who has more brokerage positions.

First, different from directors who have high centrality, directors who have more brokerages can provide more heterogenous knowledge with reduced information redundancy. A central firm is usually able to establish enough connections to acquire information. However, the acquired information can easily be homogenous and redundant, especially in a condensed network. To make sure the focal boards can acquire timely diversified information for better realizing their roles, the central firm needs someone who can provide them heterogenous knowledge with very few information redundancies. A central director can hardly ensure that his/her information is non-redundant. However, the brokerage position can usually provide the network broker heterogenous knowledge, with a reduced likelihood to create the problem of information redundancy, because a network broker can connect two or more unconnected parties and get information from those parties.

Although there are information processing costs to brokerage positions, the benefits should outweigh the additional costs. The network benefits and novelty acquired from processing that diversified information can bring the recruiting boards addition opportunities and resources (Burt, 1980b; Burt, 1982; Burt, 1992, 2000, 2004; Obstfeld et al., 2014). For example, diversified information can enable the board to have more knowledge to understand their environment and competitors, and thus better help CEO to operate the company. In addition, more central firms which have higher power and status are usually under pressure to maintain their current power and status (Mishina, Dykes, Block, & Pollock, 2010). Therefore, central recruiting firms which have higher network centrality are more eager to look for different knowledge which may help expand current network, conduct innovation, and increase performance to maintain their existing status. As a result, a director who can provide more diversified information are more preferred.

Further, recruiting a director who has more brokerages may help the central board to reduce its information processing barriers by increasing its overall information processing capability. Given that network brokers are usually someone who needs to process lots of heterogeneous knowledge and effectively absorb them to take fully advantages of the information, network brokers can usually develop high capability to process information (Rothaermel & Hess, 2007). Therefore, by bringing in a director who is a network broker, the recruiting firm can integrate and absorb this capability to help them process information. Given that a central firm usually face more network processing barriers caused by its numerus connections, a central firm should be more likely to be interested in a new director who has more network brokerage positions.

One thing to note, in reality during the recruiting process, the focal board may not fully be aware of the benefits of network brokerage positions owned by each individual and thus discuss this character actively. However, when the focal board members evaluate resources which can be provided by each director candidate, they would probably check each director candidate's network connections. Then the focal board members should understand the unique information benefits can be provided by a focal director when they see a focal director serves as the only connection between two diversified group. This can be particularly true when the focal board try to establish ties with the group(s) the focal individual connected.

Last but not least, the control benefits associated with a director candidate who is a network broker would not challenge the preexisting power dynamics of the recruiting board. The control benefits associated with brokerage position are usually limited to the focal director's direct unconnected parties, and thus can hardly affect the director candidate's overall network power and network status. As a result, board members of the recruiting firm can become less worried about bringing a competitor who is high in power. Therefore, board members of a central recruiting company become less concerned to bring in a director with more brokerage. Therefore, *H8: A recruiting firm's centrality positively moderates the relationship in H2; that is, when a recruiting firm has higher centrality, the positive relationship between director brokerage and additional board appointment becomes stronger.*

Recruiting firm's network brokerage

In addition to centrality, the recruiting firm's brokerage position may also affect their preference in selecting directors. Firms which have more brokerage positions may be interested in directors who have higher centrality to gain network status and structure power. A director candidate with higher network centrality can effectively increase the recruiting firm's network centrality by bringing in additional connections, and thus increase the network structural power and status of the focal firm (Bonacich, 1987; Shipilov & Li, 2008). Compared to other recruiting firms, a recruiting firm which have more brokerage usually has more diversified information, and thus is more informed about the power and status benefits of having a central director. In addition, a recruiting firm which has more network brokerage position can also have stronger control over its unconnected partners, and thus can leverage those partners to locate central directors. As a result, a recruiting firm which has more network brokerage is more eager and also more likely to recruit a central director. Different from the central recruiting firms, a recruiting firm which has more network brokerage positions, would be less likely to be concerned with power and status conflicts on board because higher brokerage does not guarantee overall network power. Instead, board members may be more open to welcome network central people to help them increase their overall network power. Therefore, I propose

H9: A recruiting firm's brokerage positively moderates the relationship in H2; that is, when a recruiting firm has more brokerage, the positive relationship between director centrality and additional board appointment becomes stronger.

When a recruiting firm has more brokerage positions, its board may become more aware of the importance of network brokerage and information benefits, and thus tend to select a director who also serves as a network broker. In addition, since boards of a broker firm may need to process massive information flows, they should prefer a director who can provide more information with less redundancy. In addition, the recruiting firm may want to have someone who has more experiences in processing heterogeneous knowledge and thus can help the boards to establish and increase their information absorption capability. Also, although bringing in a director candidate with lots of brokerages can further increase their information flows, the new pieces of heterogeneous information brought in by the individual may help the recruiting firm to better understand and thus process their existing information. Compared to other companies, recruiting firms which have more brokerage are also better able to identify candidates, including candidates with more brokerage positions.

H10: A recruiting firm's brokerage positively moderates the relationship in H2; that is, when a recruiting firm has more brokerage, the positive relationship between director brokerage and additional board appointment becomes stronger.

2.2. Theory and Hypotheses for Study 2

2.2.1. Director exit

The existing research on director exit shows that scandals and financial crises are major drivers for director exit (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Harrison et al., In press; Marcel & Cowen, 2014; Withers et al., 2012a). Some interpret this evidence as suggesting that directors are fired for poor performance based on scandal or financial fraud (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Marcel & Cowen, 2014). For example, the research has argued that firing current directors is a salient way to repair organizational legitimacy when facing financial crisis (Arthaud-Day et al., 2006; Marcel & Cowen, 2014). Others suggest that the director turnover process is more agentic and voluntary because directors want to decouple themselves from companies' compromised reputations (Harrison et al., In press; Withers et al., 2013). For example, a recent study suggests that organizational downgrade based on financial analysis can drive director exit because directors must protect their personal reputation and avoid negative reputational spillover from downgraded organizations (Harrison et al., In press).

Although this stream of research provides the valuable insight that director exit can be associated with reputational and performance threats, we still have a limited understanding about other drivers of director exit in non-crisis periods (Boivie et al., 2012). However, as director exit can occur at any time, companies may be eager to identify the other drivers of director exit, especially when such companies aim to retain valuable directors. To answer this question, Boivie, Graffin, and Pollock (2012) have suggested that the prestige associated with being a director, the ability to have influence, and identification with the director role decrease the likelihood of director exit while the time commitment required, holding other board appointments, and serving as a CEO at another company can increase the likelihood of director exit. This research first confirms that directors stay on boards for personal benefit. The failure to meet personal benefits or a change of situation may lead to director exit. As a result, this study finds that it is necessary to explore other potential causes of director exit from an individual perspective. This exploration can be especially important for corporations that seek to maintain their current directors and face a lower risk of financial crisis or negative median coverage.

In such cases, the question changes to why do directors remain on boards? Unfortunately, this is another great unanswered question. However, the qualitative evidence has long suggested that directors may serve to gain network benefits and social capital (Lorsch, 2012; Lorsch & MacIver, 1989). Recently, the empirical evidence has finally provided some support to this claim by showing that directors who have board experience can accumulate more social and human capital, achieve higher prestige, and more easily be promoted to executive roles (Boivie et al., 2016b). Similarly, Westphal and colleagues have shown that being a director is a way for individuals to gain entry into the elite network (McDonald & Westphal, 2010; Park & Westphal, 2013; Westphal & Khanna, 2003; Westphal & Shani, 2016). Within this elite group, certain interpersonal interaction behaviors can help directors accumulate social capital and gain other career opportunities (Westphal & Stern, 2006, 2007). In sum, the literature supports the idea that directors are motivated to stay on boards to gain social capital (Lorsch, 2012; Lorsch & MacIver, 1989).

As social capital is a major incentive for directors to stay on board, I argue that directors may also decide to exit from a board to maximize their social capital. First, it is clear that being a director is not cost-free (Lorsch, 2012). The research has suggested that time commitment, the ability to handle multiple directorships, and the ability to balance directorship and managerial roles are major constraints of directors in handling multiple jobs (Boivie et al., 2016a; Boivie et al., 2012; Tuggle, Sirmon, Reutzel, & Bierman, 2010). For example, an individual serves on five boards of 5 small companies. However, she receives a board offer from a Fortune 500 company, and that board offer requires a high level of daily engagement. As a result, she may have to leave one or two boards to take the influential seat from that Fortune 500 company. Such time and capability constraints become more severe over time because increasing globalization and hypercomputation significantly escalate the task complexity facing directors, which may cause them to feel pressured to sit on multiple boards (Lorsch, 2012). Meanwhile, directors’ current board roles and the prestige associated with such board roles may continuously bring directors other, better board- and career opportunities (Boivie et al., 2016b). When they are faced with this situation, directors must make wise decisions and strategically give up some opportunities so that they can carefully manage their directorship portfolio to maximize their gain of social capital. As a result, directors may be compelled to exit one or several boards to better pursue other opportunities.

2.2.2. Network structure and director exit

As I argued above that directors may leave their current boards to pursue better opportunities, the next question is to identify which director is most likely to leave. Directors who can gain access to more board relevant information may become more likely to leave. This is because the existing research on opportunity recognition has shown that individuals who have more access to relevant information usually have a higher chance of finding external opportunities and higher levels of relational discretion (Hoang & Antoncic, 2003; Ma, Huang, & Shenkar, 2011). Building on this argument, I further argue that directors who have more access to board-related information may also be better able to find board opportunities. This is because when individual directors have plenty of information about other boards, they can better determine whether there are employment opportunities and whether they fit those positions. Further, directors who have more information about other boards can also better evaluate each opportunity and make changes accordingly. As we already know that each director can only handle a limited number of board seats, a focal director may have to remove some existing board roles to better pursue the newly recognized opportunities. As a result, directors who have more access to board relevant information may become more likely to leave their current board.

Brokerage

Which director has more access to board relevant information? Perhaps those who have occupied advantageous network positions (Kleinbaum & Stuart, 2013; Li et al., In press; Stam & Elfring, 2008). Social network theory suggests that individuals can obtain significant information benefits from occupying superior network structural positions (Perry-Smith, 2006; Shin, Kim, Lee, & Bian, 2012). A brokerage position, i.e., occupying a position in which the broker is the only connection to two unconnected contacts within a network, is a superior network position and a key source of information (Burt, 1992; Venkataramani et al., 2014). The research has shown that being a network broker enables individuals to obtain and combine heterogeneous and non-redundant knowledge from partners who are not directly connected (Burt, 1992, 2000, 2004, 2007a; Burt, 2007b; Burt, Kilduff, & Tasselli, 2013; Li et al., In press). Considerable evidence has been accumulated on the advantages of occupying a brokerage position, which provides timely access to information about opportunities and the control of information flowing between partners (Clement, Shipilov, & Galunic, 2017; Galunic, Ertug, & Gargiulo, 2012). Therefore, a local, structurally embedded network provides informational opportunities and reduces the uncertainty and risks associated with partnering with individuals who are not connected with current partners (Burt, 1992; Burt, 2009).

Applying those arguments to the context of director exit, I argue that the information benefits associated with the brokerage position can contribute to director exit. In a director interlock network, directors who occupy a brokerage position are able to obtain heterogeneous business information (Martin et al., 2015). For example, a director who is a network broker may be able to identify other board opportunities, entrepreneurial opportunities, or managerial opportunities (Burt, 2002, 2004; Kilduff & Brass, 2010; Ma et al., 2011). Given that a network broker is the person who can gain information from network contacts, the focal director can identify more opportunities (Li et al., in press). In addition, being a network broker also includes the power of controlling information flows between disconnected network actors (Burt, 2002). As a result, a focal director may also have more network discretion on new partner selection and tie dissolution (Brass et al., 2004) and thus suffer less from network relational inertia (Gargiulo & Benassi, 2000). Therefore, the focal director is also more likely to explore and ultimately win new opportunities. Given the director's potential time and capability constraints of focusing on multiple roles and opportunities, such director also becomes more likely to drop one or multiple current board roles in his or her portfolio to better pursue those identified opportunities (Boivie et al., 2016a; Boivie et al., 2012; Lorsch, 2012; Lorsch & MacIver, 1989).

In addition, as the information and opportunities that flow among network brokers are usually diversified and homogenous, the focal director may have to spend extra time analyzing and absorbing this information (Ahuja, 2000). This absorption time may increase the focal directors' time constraints and thus increase the chances of his or her giving up some of his or her current board roles. Further, given the heterogeneity of information acquired from occupying a brokerage position, the opportunities that are discovered by network brokers may also be relatively novel and unfamiliar to the focal director (Burt, 2004). Therefore, when the focal director decides to pursue such opportunities, he or she may have to devote more time and focus on his or her new roles, which further increase his or her time constraints and his or her chances of exiting from a current board. As the result, the focal director may become more likely to exit from a current board.

H1: A director's network brokerage is positively associated with the likelihood of director exit

Centrality

A boundary-spanning brokerage position is not the only advantageous network position from which a director can obtain information benefits. Being central in a network is another well-established source to gain network informational advantage (Martin et al., 2015; Paruchuri, 2010). A central individual within his or her network is usually well-connected, enjoys an increased volume of information flow, and thus achieves better performance (Barsness, Diekmann, & Seidel, 2005; Perry-Smith, 2006; Sparrowe, Liden, Wayne, & Kraimer, 2001). Specifically, by being widely connected, a central individual can be more aware of what is going on within his or her network and thus has a greater scope than noncentral individuals for collecting and disseminating information. This great volume of information flow to central individuals helps the central individual identify opportunities and select partners (Aldrich & Zimmer, 1986; Barsness et al., 2005; Larcker et al., 2011; Perry-Smith & Shalley, 2003). Meanwhile, opportunities and potential partners are also more likely to notice the central individual because central individuals are more prominent within a network (Ibarra, 1993). Such prominence and visibility further enable the central individual to receive greater access to critical information and opportunities, which makes the central individual more likely to explore new opportunities, build new ties and dissolving existing ties (Hackman, 1985; Mintz & Schwartz, 1981; Mossholder, Settoon, & Henagan, 2005).

The central person in a network can also enjoy power and status benefits, meaning that the central individual can have more power over other noncentral partners (Bonacich, 1987; Ibarra, 1993). This power and status comes from several sources. The first source is the power and status that are embedded in the network hierarchy (Bunderson, 2003). Network centrality represents a high position in a status hierarchy, especially when the central actor has more indirect ties (Weick, 1996). Second, being central in a network indicates higher degrees of access to and control over valued information and resources (Burt, 1982). The central person can usually obtain a variety of resources and information and thus has power to decide the direction of the information outflow (Freeman, 1977; Mizruchi & Bunting, 1981; Roy & Bonacich, 1988). Further, with greater connections to and control of information and resources, central individuals suffer from lower uncertainty, fewer resource and information constraints, and thus they have more discretion to change ties without a great sacrifice of access to information and resources (Kim, Oh, & Swaminathan, 2006; Martin et al., 2015).

In support of this view, the empirical evidence at both the individual level and the corporate level has convincingly demonstrated that network centrality is a significant source of power (Brass, 1992; Brass & Burkhardt, 1992; Brass & Burkhardt, 1993). Further, the more current research has taken network centrality as a measure of network power and status for granted (Nerkar & Paruchuri, 2005). By having higher status and power, central individuals usually face a lower level of uncertainty and thus become more popular as a network partner because others may be able to decrease their uncertainty through ties to central individuals (Kim et al., 2006). As a result, central individuals may have more partner options and opportunities to obtain power (Kim & Cannella, 2008b; Kim & Cannella, 2008a). The research on both the organization level and the individual level has also shown that network centrality is usually positively associated with a higher rate of tie dissolution and new tie formation (Feeley, Hwang, & Barnett, 2008; Polidoro, Ahuja, & Mitchell, 2011) (Feeley, Hwang, & Barnett, 2008; Polidoro, Ahuja, & Mitchel, 2011).

In the context of a director network, when a director is central in his or her network, that director first obtains information benefits (Larcker et al., 2011; Shropshire, 2010). The focal director may have greater access to information and resources and is thus more aware of market opportunities and ways by which to realize those opportunities (Mizruchi, 1996). As a result, widely connected directors may become more likely to identify better opportunities elsewhere and decide to leave their current companies given their limited time and capability. In support of this argument, Boivie et al. (2012) found that the total number of interlock ties (i.e., a measure of network size) is positively associated with director exit.

In addition to the wide connectivity and great size, central directors have greater power and status over the other directors and thus have greater discretion in selecting partners (Hoffman, Stearns, & Shrader, 1990; Shropshire, 2010). This discretion can increase their chances to realize other opportunities. Further, given that central directors may have control of information and resources, they usually suffer from lower dependence on any existing ties and thus can dissolve existing ties easier than other directors (Weick, 1996). As a result, the central director can leave an existing board at a relatively lower cost and be better able to explore new opportunities or new combinations of opportunities.

Given that all directors suffer from personal information processing barriers and can only handle a limited number of board roles, any explorations of other, better board opportunities to maximize their social capital may increase their likelihood of exiting from current boards (Lorsch, 2012; Lorsch & MacIver, 1989). Actually, central directors are even more likely to leave their current boards because they suffer from greater information processing barriers due to the great amount of information they receive (Boivie et al., 2016a; Khanna et al., 2014). In addition, because of their wide connectivity and power hierarchy, central directors may be compelled to spend a great deal of time managing their current network ties and absorbing and taking advantage of information and opportunities flows. All these activities require time and thus can cause central directors to face tighter time and capability constraints. These increased constraints make it difficult for central directors to manage multiple board roles and further increase their chances of exiting from current boards to explore better opportunities. Specifically, to distinguish the current study from the existing research on network size and to better capture both the information and power and status aspect of director centrality, I have adopted eigenvector centrality as the measure of network centrality (Bonacich, 1987; Freeman, 1978). Therefore, I propose the following:

H2: An individual's network eigenvector centrality is positively associated with the likelihood of director exit

2.2.3. Gender as an individual-level contingency

Individual factors can affect individuals' decision making (Hambrick & Mason, 1984). Following this logic, directors' individual characteristics may affect their exit decision (Boivie et al., 2012). This is a particularly critical factor in network settings because social network theory assumes structural equivalence, which suggests that two network actors who occupy the same network structural position enjoy the same network benefits and will behave similarly (Mizruchi, 1993; Walker, 1985; Westphal & Shani, 2016). Given that companies may want to understand how to retain some specific directors, it is important to understand the role of individual factors as a contingency.

Personal risk preference can be a salient individual factor. Although a director who occupies a brokerage or central position can enjoy information and power benefits, exiting a current board is nevertheless a risky decision because a tie dissolution decision may reduce the focal director's centrality or even break his or her brokerage position. Further, a tie dissolution decision may lead to a loss of the focal director's current prestige and the potential opportunities associated with remaining in other board roles (Broschak, 2004; Broschak & Block, 2014). Therefore, a director who occupies the central or brokerage position has a higher level of risk avoidance and may be less likely to exit from a current board even though the focal director has sufficient information.

The current literature suggests that gender plays a key role in deciding an individual's risk preference (Ragins & Cotton, 1991). The research has shown that, in general, females are less likely to take risks compared with their male colleagues (Steinbach, Devers, McNamara, & Li, 2016). For example, Chen et al. (2016) have found that greater female representation on a firm's board will be negatively associated with the number of acquisitions and acquisition size due to their higher level of risk avoidance. The research has also found that certain personality traits, including hubris, which are closely related to risk-taking behavior, such as acquiring behavior, are less likely to be found in females (Huang & Kisgen, 2013). In addition, females are also shown to prefer stable ties, and they are good at building trust to enhance current ties (Charness & Gneezy, 2012; Niederle & Vesterlund, 2007). Building on this stream of research, I argue that when a director is female, her risk avoidance will make her less likely to make an exit decision compared to her male colleagues who occupy a similar network position. Therefore, the following is proposed:

H3: Gender negatively moderates the relationship in H1. That is, when the focal director is female, the relationship between a director's network brokerage and her likelihood of exit from the focal firm is weaker.

H4: Gender negatively moderates the relationship in H2. That is, when the focal director is female, the relationship between a director's network centrality and her likelihood of exit from the focal firm is weaker.

2.2.4. Firm performance as a firm-level contingency

In addition to individual-level contingencies, firm-level heterogeneity can also affect the relationship between network structural position and director exit (Boivie et al., 2012; Harrison et al., In press). For companies as well as scholars to better understand director exit and develop a strategy to maintain their own directors, firm-level contingencies are worth exploring. Firm financial performance can be an important fact to consider.

Financial performance is widely used by investors, banks, and analysts as a key standard to evaluate firm competitiveness and thus acts as a key scale to evaluate corporate governance and board effectiveness (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Harrison et al., In press; Marcel & Cowen, 2014). Good financial performance is also viewed as a sign of great corporate governance, well-functioned boards, and effective directors (Hillman & Dalziel, 2003). Therefore, directors from firms with better performance can have a higher level of reputation, and they thus are more likely to obtain better opportunities (Withers et al., 2012b). From this standpoint, directors seem less likely to leave a company with good performance simply because well-performing companies may bring them more opportunities and status. Moreover, the research has found that directors from companies with better performance may have developed a higher level of identification of their companies and become more satisfied with their current director job (Carmeli, Gilat, & Waldman, 2007; Collins & Clark, 2003). These enjoyable personal feelings can cause a focal director to become less likely to leave (Withers et al., 2013). The direct empirical evidence has also shown that firm financial performance has a strong main effect on director turnover (Boivie et al., 2012).

Given the significance of financial performance, it is important to explore whether and how it can affect the relationship between network structural positions and director exit. Building on the above arguments and findings, I argue that a director who has occupied a superior network position, i.e., a brokerage position or a central position, decides to leave, he or she is less likely to leave a company with high performance. Given that directors who occupy brokerage or central positions can have higher power in controlling partner selection and tie dissolution, they can have the power to decide which company to leave. As the research has already established that financial performance is negatively associated with director exit (Boivie et al., 2012), I argue that when directors who occupy either central or brokerage positions want to re-arrange their directorship portfolio and leave current boards, they are less likely to leave a company with good performance. Therefore, the following is proposed:

H5: The performance of an individual's current firm negatively moderates the relationship in H1. That is, the better the performance of a focal firm, the weaker the relationship between a director's network brokerage and his or her likelihood of exit from the focal firm.

H6: The performance of an individual's current firm negatively moderates the relationship in H2. That is, the better the performance of a focal firm, the weaker the relationship between a director's network centrality and his or her likelihood of exit from the focal firm.

2.2.5. Current firm's network positions

Current firm's network centrality

Although directors who occupy superior network positions, including network brokerage position and central position, are more informed about potential opportunities and have higher network discretion to leave (Perry-Smith, 2006; Shin et al., 2012), those directors are less likely to leave a company which can provide them lots of network benefits. Therefore, when individual directors plan their potential exit, they will carefully consider the network position of the company they may leave.

A director is less likely to leave a company which has higher network status, i.e. network centrality. A company's network centrality can reflect the overall network structural power, network connections, and thus the network status of the focal firm (Bonacich, 1987; Shipilov & Li, 2008). Higher levels of network centrality represent that the focal firm will have higher influencing power over other firms, more accesses to information and resources, and thus more opportunities and network discretions (Aldrich & Zimmer, 1986; Barsness et al., 2005; Larcker et al., 2011). Being a director of a firm, which has high network centrality, the focal director can also enjoy those benefits provided by this company. In addition, serving on board of a company high in network centrality may help a director better label himself/herself since serving on a prestigious board can also increase his/her prestige and thus help him/her obtain more career opportunities. As research suggested, directors in general value prestige and power (Acharya & Pollock, 2013).

In addition, leaving a company with a higher level of network centrality may hurt a director's individual network status. Leaving a company may lead to tie dissolutions at individual level, and this can be particularly true when the company has higher network centrality. In other words, when a director decides to leave a company that has higher network centrality, he/she undertakes the risk of losing his/her existing superior network position. Ties, which contribute to a director's superior network position, may exist merely because the other parties want to tie to the central company, which the focal director decides to leave. If this is the case, a focal director may become less likely to leave a company which has higher network centrality to make sure that he/she won't not experience a big loss in network capital.

The above arguments can be true for directors who have more network brokerages or directors who have high centrality. First, network brokers and central directors usually have more accesses to information and thus can be more accurately evaluate how beneficial it can be to serve on board on a company which has high network centrality. Second, network brokers and central directors are experiencing the network benefits associated with their network superior position, and thus would be less willing to take risks which may result in losing of existing network superior position. Therefore,

H7: The network centrality of an individual's current firm negatively moderates the relationship in H1. That is, the more central a focal firm is, the weaker the relationship between a director's network brokerage and his or her likelihood of exit from the focal firm.

H8: The network centrality of an individual's current firm negatively moderates the relationship in H2. That is, the more central a focal firm is, the weaker the relationship between a director's network centrality and his or her likelihood of exit from the focal firm.

Current firm's network brokerage

Similarly, when a company has many network brokerages, its board of directors can have better access to heterogeneous and diversified information compared to directors in other companies (Burt, 1992, 2000, 2004, 2007a; Burt, 2007b; Burt et al., 2013). This information source can help directors in tremendous ways, such as discovering career opportunities, developing personal skills and capabilities, and acquiring resources (Clement et al., 2017; Galunic et al., 2012). Further, when a company has network brokerages, its directors can leverage this brokerage to have controlling power over other directors of their directly connected firms. This controlling power can help directors of the focal company acquire necessary resources from other directly connected individuals, gain network power and discretions, and establish prestigious. All in all, similar to a focal firm which has higher network centrality, a focal firm has more network brokerage can also provide their directors with lots of benefits and thus help them in their career. As a result, directors are not likely to leave companies which have lots of brokerages. Specifically, central directors and broker directors may be more likely to stay in firms which have high brokerage because the existence of their brokerage or centrality may heavily depend on the firm. To avoid any potential loss, they would choose not to take the risk to leave.

Further, the superior network position, i.e., network centrality and brokerage, of directors enable them to better evaluate the value of a focal firm with high brokerage and thus become less likely to leave. Therefore, I propose,

H9: The network brokerage of an individual's current firm negatively moderates the relationship in H1. That is, the more network brokerage a focal firm has, the weaker the relationship between a director's network brokerage and his or her likelihood of exit from the focal firm.

H10: The network brokerage of an individual's current firm negatively moderates the relationship in H2. That is, the more network brokerage a focal firm has, the weaker the relationship between a director's network centrality and his or her likelihood of exit from the focal firm.

2.3. Theory and Hypotheses for Study 3

2.3.1. Director mobility

Director mobility may have three major components, director selection, director exit, and the link between selection and exit. A majority of the existing director selection studies take a firm perspective to explore which directors will be selected by the firm (Cashman et al., 2013; Keys & Li, 2005; Kim & Cannella, 2008c; Westphal & Stern, 2006; Zhu & Chen, 2015b; Zhu & Westphal, 2014). For example, the research has shown that directors who are well connected are preferred by recruiting companies (Cashman et al., 2013; Kim & Cannella, 2008c). In addition, female directors and minority directors are more likely to be selected by companies under certain social pressure (Gregorič et al., 2017; Westphal & Graebner, 2010). At the individual level, Westphal and colleagues take an employer perspective to further show that certain social psychological factors, including interpersonal interaction with recruiting managers and directors, and sharing a similar functional background with recruiting directors and managers who have higher status can bring an individual additional board appointments (Westphal & Shani, 2016; Westphal & Stern, 2006, 2007; Westphal & Zajac, 1995; Zhu & Westphal, 2014).

However, director selection is a double-sided selection process. Individual directors must also accept appointments to achieve final selection outcomes. Unfortunately, we do not have enough knowledge about how individual directors select their future boards. A major reason for this ignorance is that it is very difficult to obtain enough information about how many board options face each director. However, given that the final selection outcomes should be approved by individual directors, we should to some extent be able to understand how directors select companies by using the final matched outcomes.

To understand how directors select companies, the first issue is why directors decide to stay on a board. Management scholars and practitioners have long suggested that directors may serve to obtain social capital (Lorsch, 2012; Lorsch & MacIver, 1989). In partial support of this argument, a recent empirical study shows that directors who have board experience and accumulate more social and human capital achieve higher prestige, and it becomes easier for them to get promoted to executive roles (Boivie et al., 2016b). The research has also shown that affiliating with a prestigious company to gain social capital is a major reason for individuals to remain on a board (Boivie et al., 2012). Practitioners have claimed that directors can obtain career development, networking opportunities, business development, the opportunity to give back, supplement their income, and obtain prestige by sitting on boards (Lenkov, 2014). Similarly, other research has shown that individuals can join an elite group by serving on a board of directors (McDonald & Westphal, 2010; Park & Westphal, 2013; Westphal & Khanna, 2003; Westphal & Shani, 2016). Actually, current directors may even adopt certain interpersonal interaction behavior, such as flattering to please their managers and other directors to gain extra board appointments (Westphal & Stern, 2006, 2007). Considering this literature, it seems that gaining social capital is at least one of directors' major considerations when they decide to accept board offers (Lorsch, 2012; Lorsch & MacIver, 1989).

As discussed above, directors may accept board offers to gain social capital; thus, the next step in answering director mobility questions (i.e., where do directors go after they leave their current board?) is to understand why they leave their current board. The existing director exit research has mainly suggested that negative firm events, including negative median coverage, financial restatement, and poor firm performance, can lead to director exit (Arthaud-Day et al., 2006; Daily & Dalton, 1995; Harrison et al., in press; Marcel & Cowen, 2014; Withers et al., 2012a). Although informative, this research only focuses on a very special event and thus ignores a more common situation, i.e., directors may leave when there is no negative event (Boivie et al., 2012). The research has suggested that when there has been no negative event, director exit is mainly voluntary and driven by directors' personal considerations, such as the prestige associated with being a director, the ability to gain influence, identification with the director role, time commitment, holding other board appointments, and serving as a CEO at another company (Boivie et al., 2012). In addition to pursuing personal considerations, directors may also leave because of certain constraints. The research has suggested that the major challenges of being a director include time constraints and difficulty handling multiple governing roles (Boivie et al., 2016a; Boivie et al., 2012). Jay Lorsch and colleagues have mentioned in their books that time constraints will become a more serious problem facing directors in the future because of the increased complexity of corporations and the trend of globalization (Lorsch, 2012). To support this argument, the empirical evidence has shown that directors become less likely to take seats on multiple boards, especially after the implementation of the Sarbanes-Oxley Act (SOX) (Linck, Netter, & Yang, 2009). In sum, directors may be compelled to leave certain boards to pursue other personal considerations or to reduce time and other constraints. Incorporating the director selection and director exit literature reviewed above, it seems possible that directors may drop some board roles to save time and to reduce other constraints to better maximize their social capital.

2.3.2. Tie reconstitution

Why do individual directors can become eager to accumulate social capital? Social network theory suggests that individuals can enjoy network benefits, including access to critical resources, information and control power by having network connections or occupying certain network structural positions (Granovetter, 1973, 1985; Kleinbaum & Stuart, 2013; Li et al., in press; Perry-Smith, 2014; Stam & Elfring, 2008). In addition, by having more external ties, individual directors are able to obtain different knowledge and perspectives to and thus be able to evolve in firm strategic decision-making processes (Carpenter & Westphal, 2001). Further, social capital has also been shown to be related to a director's future career success (Boivie et al., 2016b). Because of the importance of having social capital, individual directors may have the motivation to maintain their current network ties while accumulating new network ones. However, as I argue above, because directors suffer from time and other constraints that prevent them from serving on too many boards, they must pick a new company that can enable them to both maintain ties with the prior companies that they have left and maximize new ties (Boivie et al., 2016a; Khanna et al., 2014).

Which company can help a director achieve the purposes stated above? We must first understand director exit from a network perspective. From a network perspective, director exit represents the fact that the tie between a focal director and his or her prior board has been broken if no other ties between the focal director and his or her prior board exist. This breaking of ties means that the focal director can no longer leverage the resources and information of his or her prior board and can no longer leverage the personal human and social capital of other directors on his or her prior board. However, if the focal director is able to reconstitute or maintain a tie with at least one director of his or her prior board in the context of serving on another board, the focal director may still be able to obtain the resources mentioned above by leveraging this indirect tie to his or her prior boards and to other directors on that prior board (Pfeffer & Salancik, 1978; Westphal et al., 2006). Given that the value, resources, and social capital associated with a prior board tie can be significant and critical (Grosser, Venkataramani, & Labianca, 2017; Li et al., In press), a focal director can be motivated to reconstitute a broken tie in his or her new board to maintain his or her prior network benefits. Partially supporting this view, the research has found that managers and directors may choose to reconstitute informal friendship ties to manage the firm-level resource dependence and uncertainty associated with turnover (Westphal et al., 2006). Therefore, I argue that a leaving director is more likely to accept offers from another board that has at least one director from his or her prior boards.

Some may argue for different explanations. For example, a focal director may simply be more likely to be selected by a board that has his or her prior board members because shared experience makes the focal director more likely be picked by such boards (Westphal & Zajac, 1995; Zhu & Chen, 2015a; Zhu & Westphal, 2014). In addition, the focal director may be recommended by his or her prior board members to the new company. However, as I discuss above, director selection is a two-way selection process. Being selected by a company does not mean that a focal director is more likely to accept that offer. The focal director only accepts an offer when he or she believes that the offer is valuable. Therefore, a director's acceptance of an offer indicates that he or she believes the new company can to some extant satisfy his or her personal goals, i.e., maintaining or gaining social capital.

Some may further argue that the focal director may also be more likely to select a board with similar others, i.e., members from his or her prior board, because they simply prefer co-workers to have a similar background. The existing research seems to support this claim by showing that similarity does increase the final matched pairs of boards and directors (Westphal & Zajac, 1995; Zhu & Chen, 2015a; Zhu & Westphal, 2014). However, this specific context has reduced this possibility. Given that this study focuses on individuals who have left their prior boards in search of improved social capital, they must not want to obtain a seat on a board that is too similar to their previous one. The network research has well documented that similarity may predict network ties.

Therefore, if a director goes to a new board with directors who are similar to the directors of his or her prior board, their decision to exit from their prior board becomes meaningless because he or she may not experience much difference in social capital (Granovetter, 1973). Conversely, forming relationships with different directors can provide heterogenous information that helps to accumulate diversified social capital (Burt, 2004; Burt, 2010). The current research either views director exit as involuntary due to poor performance or reputational threats or as voluntary due to time and other constraints (Arthaud-Day et al., 2006; Boivie et al., 2012; Daily & Dalton, 1995; Marcel & Cowen, 2014). When a director's exit is because of performance or reputational issues, sitting on a new board with previous board colleagues can increase the reputational risk because similar board members from poorly performing firms may drive the public to stigmatize the new company and their directors because of the potential negative reputational spillover (Zavyalova, Pfarrer, Reger, & Shapiro, 2012). Therefore, a company is less likely to keep multiple directors from companies suffering from reputational threats or poor performance.

In addition, when a director's exit is because of performance or other reputational threats such as a financial crisis, the focal director may want to avoid colleagues from the prior fraud company so that he or she can decouple himself or herself from the fraud company to protect his or her reputation (Evensky, 2004; Marcel & Cowen, 2014). Therefore, when a director's exit from his or her prior board is because of reputational threats facing that company or poor performance, the focal director may become less likely to accept an offer from a company that has directors from his or her prior board.

Finally, when a director's exit is because of time constraints or other personal considerations, sitting on a new board with previous board colleagues can easily make the old constraints occur again because the members from the prior board may stick to shared routines and bring their old practice to the new board (Gilbert, 2005). This can be particularly true given that modern boards are facing an increased level of uncertainty and complexity (Lorsch, 2012; Lorsch & MacIver, 1989). To conclude, similarity seeking behavior cannot predict the likelihood of a director to accept a board offer from a board that has at least one director from the focal director's previous board that he or she just left. Therefore, the following is proposed:

Hypothesis 1: After exiting a board, a focal director is more likely to join a board that has at least one director from the focal director's prior board which he or she has just left.

2.3.3. New tie formation

Reconstituting old ties cannot be the whole story. As I theorize above, directors leave their current companies to increase social capital. Reconstituting old ties in another company can only retain the exiting social capital but does not help them gain new social capital. To gain new social capital, those directors must form new ties. Network ties have been shown to significantly affect individuals (Benson, 1975; Burt, 1980a; Ebadi & Utterback, 1984; Lincoln & Miller, 1979). For example, the research has found that CEO candidates who have relational ties with a current CEO are more likely to be appointed as a future CEO (Wiersema et al., 2018). Further, relational embeddedness can also affect bank managers' knowledge transfer and learning (Uzzi & Lancaster, 2003).

In addition, new-tie formation represents an increase in network size. Associated with increased network size, there may also be a potential increase in network power and status reflected as higher centrality (Bonacich, 1987). The existing network research has shown that larger network size and higher centrality can bring a focal node more information and control benefits (Ibarra, 1993; Ibarra & Andrews, 1993; Mahmood et al., 2011), and focal directors may be able to obtain more network benefits and network capital by having a larger network and higher centrality. For example, Geletkanycz, Boyd, and Finkelstein (2001) have shown that a CEO's total number of external director ties positively affects CEO compensation. In addition, El-Khatib et al. (2015) suggest that high-centrality CEOs can leverage their power and influence to pursue private benefits. Therefore, I further argue that leaving directors are more likely to move to companies that enable them to establish new ties with individuals who are outside their current network (Morrison, 2002).

Conceptually, accepting any offer from a new company will bring a focal director some new network contacts and increase his or her network size, which can increase his or her network benefits. However, in reality, the quantity and quality of new ties are relevant (Ahuja et al., 2012). The research has suggested that widely connected individuals are more able to obtain critical information; build network status; and influence other, less connected, partners (Morrison, 2002; Tsai & Ghoshal, 1998). For a director who just left his or her previous board, a necessary issue in addition to maintaining his or her previous network is to find a company that can enable him or her to establish many new ties. These new ties can to some extant recover the loss of social capital incurred from exiting the prior board, and they can help a focal director to gain new social capital and accumulate new resources. Therefore, I first argue that directors who have left prior companies are more likely to accept offers from new companies that can enable them to form new ties.

However, the quality of new ties is also important. The research has suggested that individuals can successfully leverage indirect ties to collect information and resources (Clement et al., 2017; Galunic et al., 2012; Westphal, Seidel, & Stewart, 2001). Specifically, connecting to different people is critical in accumulating social capital because of the great benefits associated with heterogeneous information, resources and capital (Li et al., in press; Paruchuri & Awate, 2017).. Therefore, it may be relatively less meaningful for a director to serve on new boards that mainly consist of individuals to whom the focal director may be indirectly connected. In addition, the existing evidence has shown that network diversity and diversified information and knowledge can better help the focal node to improve his or her performance and career (Li et al., in press; Paruchuri & Awate, 2017). Building on this argument, I argue that the focal director may also try to establish ties with individuals who are not in the focal director's network, i.e., not directly tied or not indirectly tied. By establishing ties with individual directors outside his or her current network, the focal director can not only expand his or her network but also accumulate diversified and heterogeneous network benefits. Therefore, the following is proposed:

H2: After exiting a board, a focal director is more likely to join a board that has more directors who are outsiders to the focal director's network.

2.3.4. The number of existing ties as a network contingency

There are multiple contingencies that may affect the focal director's selection of his or her future boards (Oehmichen et al., 2017; Tang, Crossan, & Rowe, 2011; Westphal & Shani, 2016). Among those contingencies, I explore the impacts of the number of existing ties between the focal director and his or her prior board that he or she has recently left and the focal director's gender. I focus on these two contingencies because the former represents the network characteristics of the focal director's prior board, and the latter represents the director's personal attribute. By exploring the contingency effect of those two factors, this study can offer an important and more complete view to explain how directors select boards to maintain and increase their network capital.

As I discuss above in H1, directors may want to reconstitute a tie with at least one member from their prior board to maintain indirect access to the resources and social capital of their prior board. However, when a focal director already has multiple indirect ties to his or her prior board (i.e., the focal director and some other directors of his or her prior board have served on the same board in a third company), the focal director may not need to reconstitute a new tie (Westphal et al., 2006). Building new ties with director c in another company may not be able to further help b to obtain more information and resources; however, it may provide b extra time and support to handle the additional board role (Boivie et al., 2016a). Therefore, from a focal director's perspective, b may not want to accept an offer from another company where c serves as a director with all the other factors controlled. Therefore, when there are multiple other ties between the focal director and his or her prior board that he or she has left, the focal director may not need to accept a board offer from a board that has directors from the focal director's prior board.

Differently, when there are other ties between a focal director and his or her prior board, the individual is more likely to seek new ties. This is because the focal director actually does not need to consider maintaining network benefits, and his or her network benefits may not decrease by breaking ties with his or her prior board. Actually, by breaking ties with his or her prior board, the focal director can gain more available time and thus further increase his or her likelihood of serving on another board. When the focal director is selecting a board, as I argue in H2, he or she may think more about expanding his or her network so that he or she can gain access to diversified information and opportunities and increase his or her network power. Therefore, when there are multiple other ties between the focal director and his or her prior board that he or she has left, the focal director may be more likely to accept a board offer from a board that has directors who are outsiders to the focal director's network.

H3: The number of existing ties between the focal director and directors of his or her prior board will (a) negatively moderate the relationship proposed in H1; and (b) positively moderate the relationship proposed in H2.

2.3.5. Gender as an individual-level contingency

Gender is widely adopted as a measure to proxy individual risk preference (Ragins & Cotton, 1991). Females are in general less likely to pursue risky decisions compared to their male colleagues (Steinbach et al., 2016). For example, boards with greater female representation engage in fewer acquisitions (Chen et al., 2016). Evidence has further shown that females seldom exhibit personalities related to risk-taking behaviors (Huang & Kisgen, 2013). In addition, females prefer stable ties and are good at building trust to enhance current ties (Charness & Gneezy, 2012; Niederle & Vesterlund, 2007). According to this argument, when a director is female, her risk avoidance may make her more likely to reconstitute broken ties because tie reconstitution can reduce the risk of her exit decision and help her to maintain a stable relationship. Therefore, the following is proposed:

H4: Being female will positively affect H1; that is, after exiting a board, a female director compared to a male director is more likely to accept board offers from boards that have at least one director from the focal director's prior board that she has just left.

Differently put, establishing ties with individuals completely outsider her network may be a risky decision for female directors. The research on tie formation has suggested that both individuals and companies prefer to build ties with familiar colleagues to reduce uncertainty (Westphal & Zajac, 1995; Zhu & Chen, 2015a; Zhu & Westphal, 2014). For example, (Boone, van Olffen, van Witteloostuijn, & de Brabander, 2004) showed that top management teams prefer to select similar managers and may only select diversified members when they face poor performance and other environmental constraints. Establishing ties with a network outsider can produce unpredictable outcomes (van Dijk, Meyer, van Engen, & Loyd, 2017). For example, Ahuja (2000) showed that too much diversified information may lead to absorption difficulties and thus reduce performance. Therefore, although females are good at communicating and socializing, their risk aversion personality may prevent them from accepting offers from companies that are full of strangers. As a result, the following is proposed:

H5: Being female will negatively affect H2; that is, after exiting a board, a female director compared to a male director is less likely to accept board offers from a board that has more directors who are outsiders to the focal director's network.

3. METHOD

3.1. Data and Sample

To construct the director-level network for study 1 and study 2, I collected data on directors, boards and CEOs of Standard & Poor's (S&P) 1500 companies from 2010 to 2017. I gathered data mainly from Institutional Shareholder Services (ISS), Compustat Executive Compensation (Execucomp), and COMPUSTAT databases. The final samples for study 1 and study 2 are at the director-year level. After accounting for time lags, I obtained 76,932 director-year observations for 17,919 directors in study 1, and 78,170 director -year observations for 18,013 directors in study 2.

To construct the bipartite network for study 3, I collected data on directors, boards, CEOs and company characteristics of Fortune 100 companies between 2013 to 2016. Similarly, data has been collected from Institutional Shareholder Services (ISS), Compustat Executive Compensation (Execucomp), and COMPUSTAT databases. After removing companies which are not consistent in the Fortune 100 list from 2013-2016, I obtained a final a sample of 1076 directors and 75 firms for 4 consistent years.

3.2. Variables

3.2.1. Dependent variables

New tie formation. In study 1, I use a binary variable, new tie formation, to capture whether the focal director gets an additional board appointment. This variable is coded as 1 if a new combination of director ID and company ID is captured in the observation year, and 0 otherwise.

Tie dissolution. In study 2, I create a binary variable, tie dissolution, to capture whether the focal director dissolves any existing tie. This variable is 1 if an existing combination of director ID and company ID no longer exists in the following year, and 0 otherwise.

Director company tie matrix. To test Hypothesis 1, Hypothesis 3a, and Hypothesis 4 in study 3, I created a director-company level matrix to reflect the network tie of each director-company pair. If there is a tie between a director and a company, the matrix unit is 1.

Director company tie matrix for directors who have a tie dissolution. To test Hypothesis 2, Hypothesis 3b, and Hypothesis 5 in study 3, I adopted another director-company level matrix to reflect the network tie of each director who has experienced a tie dissolution in the prior year and company pair. If there is a tie between a director who has experienced a tie dissolution in the prior year and a company, the matrix unit is 1.

3.2.2. Independent variables

Brokerage. I used Burt’s structural holes measure to assess brokerage. Structural holes refer to the absence of a link between two contacts who are both linked to an actor (Burt, 1992). The constraint measure from (Burt, 1992) reflects the actor's lack of access to structural holes. High constraint indicates that a firm’s contacts are densely connected with high redundancy in information flow. Work ties were used to represent network ties for calculating structural holes. If a director works for a company, there are ties between the focal director and other directors of that company. I then calculated constraint in R using the following formula (Borgatti, Everett, & Freeman, 2002).

$$constraint_i = \sum_j \left[p_{ij} + \sum_q p_{iq} p_{qj} \right]^2, q \neq i,j$$

Where p_{ij} is the proportion of the actor i's ties invested in connection with firm j, and $\sum_q p_{iq} p_{qj}$ is the sum of the indirect tie from firm i to firm j via all firms q. As this formula yields a measure that has higher values indicative of greater constraint (i.e., fewer structural holes), I use 1 - constraint to capture brokerage. Director's access to structural holes are my independent variables in both study 1 and study 2. I also adopted recruiting firm's access to structural holes 1 as a moderating variable, and exited firm's access to structural holes in study 2 as a moderating variable.

Centrality. Network centrality refers to the extent to which an actor occupies a central position in a network (Freeman, 1979; Freeman, Roeder, & Mulholland, 1979). It reflects that actor's importance in the network (Kilduff & Tsai, 2003) and implies a high position in a status hierarchy as well as a high degree of access to and control of valuable resources (Brass, 1984). I used the eigenvector centrality, which captures not only the connectedness of the focal actor but also the connectedness of its contacts (Bonacich, 1987). Individual directors and firms can obtain higher eigenvector centrality by being connected to a group of contacts that have many well-connected, powerful contacts of their own (Koka & Prescott, 2008; Podolny, 2001). Director's eigenvector centrality in both study 1 and study 2 are my independent variables.

Further, I adopted the recruiting firm's eigenvector centrality in study 1 as a moderating variable and the exiting firm's eigenvector centrality in study 2 as a moderating variable.

Indirect tie dissolution matrix. To test Hypothesis 1, Hypothesis 3a, and Hypothesis 4 in study 3, I created an indirect tie dissolution matrix. If there was a dissolution of an indirect tie between a director and a company, I coded it as 1; otherwise it was 0. Figure 1 shows the logic for using the indirect tie dissolution in predicting director-company tie formation.

Network outsider ratio matrix. To test Hypothesis 2, Hypothesis 3b, and Hypothesis 5 in study 3, I calculated the network outsider ratio matrix. Each unit of the matrix was measured as the ratio between the total number of directors in the focal director's new company who were second order network outsiders to the focal director, and the board size of this new company.

To account for reversal causality, I lagged all my independent variables for a year.

3.2.3. Moderating variables

Gender. Gender is operationalized as a binary variable. If the focal director is female, this variable is 1, and 0 otherwise. This measure is to be consistently used from study 1 to study 3.

Firm performance. A director's current firm performance was measured as the return on assets (ROA) of the single highest performing firm to which a director is connected. I adopted the single highest performance because recruiters may be most attracted by an individual's best performance. This measure was adopted in both study 1 and study 2.

Number of Existing Ties (i.e. existing ties). This variable was calculated as the total number of indirect director-company ties owned by the focal director. I counted the total number of indirect pathways through which a focal director can connect to firms.

3.2.4. Control variables

For study 1 and 2, I control for a number of potentially confounding factors at various levels of analysis. At the industry level, I control for industry median performance measured by industry median ROA. As for characteristics of firms which directors serve on, I control for the single largest firm size measured by the log of total employees, organizational slack, and R&D intensity of all firms in which the focal director serves. For board characteristics, the average of board total independent directors, female directors and board average external appointments of all boards on which the focal director serves are also controlled. Further, the average of the CEO tenure and CEO compensation of all firms in which the focal director serves are also controlled. Finally, at director level, I controlled for director tenure and director age.

For study 3, I controlled for firm performance measured by ROA, firm centrality, firm size, and CEO duality at the firm level. I also controlled for director age at director level. For network structures, I controlled for network density. Rate parameters were also controlled in study 3.

3.2.5. Analytical strategies

For both study 1 and study 2, I use multiple failure event history analysis, which is designed for use in modeling "time to event" data when either of two or more events (failures) occur for the same subject (Beck & Katz, 2004). Multiple failures event history analysis is particularly suitable for my context because either director selection or director exit can happen several times to a single person within the observation period. Further, the event history analysis is suitable here because the survival time in at either director selection or director exit context is often "right-censored", meaning that the study period may end before the event of interest occurs (Morita, Lee, & Mowday, 1993). Right-censoring is not a concern for event-history methods. I used Stata 14 to run regressions in study 1 and study 2. I will use the observation year as the time variable and individual-firm code as the individual-firm level classification variable. The year 2010 is set as the enter time of the multiple failure models.

I use RSIENA to run stochastic actor-oriented models (SOAM) for study 3. SOAM is a technique that uses Markov Chain Monte Carlo Maximum Likelihood Estimation (MCMC-MLE) to model network dynamics and evolution (Snijders, 2005). This approach enables me to model tie interdependence across the director interlock network, appropriately capture the time-based nature of network tie formation through longitudinal analysis, and test whether the hypothesized effects of director mobility persist when analyzed in the broader network context. RSIENA is so far the only available package to run longitudinal SOAM, and it is well adopted by previous research (Howard et al., 2017).

4. RESULTS

4.1. Results for Study 1

Table 1 reports the means, standard deviations, and correlation coefficients of all hypothesized and control variables in study 1. The maximum VIF was 1.85, far less than the recommended ceiling of 5 (Bagheri & Midi, 2009; Montgomery, Peck, & Vining, 2012). Multicollinearity does not appear to be a problem.

Event history analysis results are reported in Table 2. Model 1 presents the base model on director selection with control variables. Model 2 presents the main effects of individual director's centrality and brokerage on director selection. Model 3 provides the main effect with the control of both firm performance and director gender, and Model 4 reports the moderation effect of gender and firm performance.

As expected, Model 2 shows a positive and statistically significant relationship between a focal director's brokerage and director selection ($b = 4.718$, $p = 0.000$), which supports Hypothesis 2. However, there is a negative and statistically significant relationship between the focal director's centrality and director selection ($b = -0.090$, $p = 0.034$), which is opposite to Hypothesis 1. This result may be caused by network embeddedness, which I discuss further in the discussion section.

Model 3 shows the main effect with the control of gender and average home firm performance. Consistent with my theory, gender has a positive and statistically significant relationship with director selection ($b = 0.198$, $p = 0.003$), suggesting that female directors are in general more popular in the director labor market. Home firm performance has a negative and statistically significant relationship with director selection (b = -0.709, p= 0.001), suggesting that directors from good performing firms are less likely to gain additional board appointments. This may be explained by the fact that good performing firms require a higher level of director engagement, which reduces the likelihood of the focal director accepting an additional board offer.

Model 4 tests the moderation effect of gender and average home firm performance. Surprisingly, gender has a negative moderation effect on both director's brokerage and director's centrality (b = -0.709, p= 0.001), meaning that a female director who is more central in her network or who has more brokerage positions is less likely to gain an additional board appointment, compared to her male colleagues who occupy the similar network position. These results are opposite to my Hypotheses. I further discuss this outcome in the discussion section.

Model 5 shows the main effects of firm brokerage and firm centrality on director selection. I tested those Hypotheses separately because Hypothesis 7-Hypothesis 10 only apply to directors who have gained additional appointments in the observing year. Therefore, this is a sub-sample of my original sample. Model 6 suggests that recruiting firm's centrality negatively and significantly moderate the relationship between director centrality and director selection (b=-27.101, p=0.038), supporting Hypothesis 7. However, recruiting firm's centrality does not have a statistically significant moderation effect on the relationship between individual brokerage and director selection (b=-0.094, p=0.770), failing to support Hypothesis 8. Further, recruiting firm's brokerage positively moderates the relationship between director centrality and director selection (b=25.347, p=0.038), and the relationship between director brokerage and director selection (b=0.055, p=0.028), thus supporting Hypothesis 9 and Hypothesis 10.

The overall Hypothesis testing results are shown in Table 3.

4.2. Results for Study 2

Table 4 reports the means, standard deviations, and correlation coefficients of all hypothesized and control variables in study 2.

Event history analysis results are reported in Table 5. Model 1 presents the base model on director exit with control variables. Model 2 presents the main effects of individual director's centrality and brokerage on director exit. Model 3 provides the main effect with the control of both firm performance and director gender, and Model 4 reports the moderation effects of gender and firm performance.

As expected, Model 2 shows a positive and statistically significant relationship between a focal director's brokerage and director exit (b=2.289, p=0.000), which supports Hypothesis 1 of study 2. However, there is no statistically significant relationship between the focal director's centrality and director exit (b=0.605, p=0.639), failing to support Hypothesis 2. Model 3 shows the main effect with the control of gender and average firm performance. Consistent with my theory, gender has a negative and statistically significant relationship with director exit (b=-0,074, p=0,007), suggesting that female directors are in general less likely to exit from a current firm. The home firm performance also has a negative and statistically significant relationship with director exit (b=-0.497, p=0.000), suggesting that directors are less likely to leave a good performing firm.

Model 4 tests the moderation effect of gender and maximized firm performance. However, I fail to find the significant moderation effects of gender on the relationship between director's brokerage and director exit (b=0.089, b=0.698), and on the relationship between director's centrality and director exit (b=2.031, b=0.726), meaning that there is no statistically significant difference between a female director who is more central in her network or who has more brokerage position and a male colleague who occupies the similar network position. These results fail to support both Hypotheses 3 and Hypothesis 4. In addition, Model 4 also suggests that there is a negative but statistically insignificant moderation effect of maximized firm performance on the relationship between director centrality and director exit (b=89.388, b=0.373), failing to support Hypothesis 6. Further, maximized firm performance has a positive and statistically significant relationship between director brokerage and director exit (b=2.551, p=0.000), which is opposite of Hypothesis 5. This result suggests that when the director's maximized firm performance is higher, the director is more likely to exit from an existing company. I will further discuss this finding in the discussion section below.

To test Hypothesis 7-Hypothesis 10, I have Model 5 to show the moderation effects of firm brokerage and firm centrality on director exit. Similar to what I've done in study 1, I also tested those Hypotheses separately because Hypothesis 7-Hypothesis 10 only apply to directors who have exited from a company in the observing years. Therefore, this is a sub-sample of my original sample in study 2. Model 6 suggests that recruiting firm's brokerage negatively and significantly moderate the relationship between director brokerage and director exit (b=3.864, p=0.042), supporting Hypothesis 9. However, recruiting firm's centrality does not have a statistically significant moderation effect on the relationship between individual centrality and director exit (b=6.701, p=0.786), and the relationship between individual brokerage and director exit (b=0.431, p=0.174), failing to support both Hypothesis 7 and Hypothesis 8. Further, I cannot find a significant moderation effect of recruiting firm's brokerage on the relationship between director centrality and director selection (b=-4.830, p=0.965), failing to support Hypothesis 10.

The overall Hypothesis testing results for study 2 are shown in Table 6.

4.3. Results for Study 3

To apply the stochastic modeling approach, I first checked the changes in network ties between two consecutive waves of observation. The Jaccard index (Jaccard, 1900) for my sample was 0.462 and 0.431, which were all greater than the 0.3. Therefore, my sample satisfies the assumptions of stochastic network evolution (Snijders, Van de Bunt, & Steglich, 2010).

Table 7 shows the results of Siena for Hypothesis 1, 3a, and Hypothesis 4, with a dependent variable of new tie formation. Siena models require the t-ratios less than 0.25 for the overall model and less than 0.1 for model predictors (Snijders, Steglich, & van de Bunt, 2008) to achieve convergence. All my models meet this convergence requirement. Model 1 is the base model with control variables.

Model 2 shows the main effect of an indirect tie dissolution between a focal director and the recruiting company, and Model 3 shows the full model, considering the moderation effect of gender and redundant indirect ties owned by the focal director. The network structural term, network density, is consistently significant from Model 1 to Model 3 in predicting changes in director-company tie formation, suggesting that some of the observed network changes are caused by underlying social processes associated with density. This result further confirms the existence of network interdependence in my sample, and thus supports the selection of stochastic modeling approach.

As Model 2 suggests, the relationship between dissolution of indirect tie between the focal director and the recruiting company and the new tie formation between the focal director and the recruiting company is insignificant ($b=-0.259$, $p>0.1$), and thus fails to support Hypothesis 1. In Model 3, neither being female ($b=2.557$, $p>0.1$) or redundant tie ($b=1.496$, $p>0.1$) moderates the proposed main effect. Therefore, I do not find support for Hypothesis 3a, and Hypothesis 4.

Further, Table 8 shows the hypothesis testing results for Hypothesis 2, Hypothesis 3b, and Hypothesis 5, with a dependent variable of new tie formation after tie dissolution. Model 1 is the base model with control variables. Model 2 shows the main effect of network outsider ratio in the recruiting company, and Model 3 shows the full model, considering the moderation effect of gender and redundant indirect ties owned by the focal director. The network structural term, network density, again, is consistently statistically significant from Model 1 to Model 3 in predicting changes in director-company tie formation.

As Model 2 suggests, the network outsider ratio between the focal director and the recruiting company significantly but negatively predict the new tie formation between the focal director and the recruiting company after a tie dissolution happening to the focal director ($b=-4.700$, $p<0.001$). Interestingly, this result opposite of that proposed in Hypothesis 2, and may suggest another movement mechanism, which I will discuss further in the discussion section. In Model 3, being female has a positive moderation effect on new tie formation ($b=0.669$, $p<0.01$), suggesting that females are actually more likely to go to companies with more network outsiders. However, redundant ties do not moderate the proposed main effect ($b=-3.111$, $p>0.1$). Therefore, I do not find support for Hypothesis 3b, and Hypothesis 5.

All my hypotheses testing results for study 3 are shown in Table 9.

5. DISCUSSION

5.1. Director Mobility

The three studies that comprise my dissertation provide some broad insights into director mobility, from both the firm/market perspective, and the individual perspective. Study 1 shows that firms select their outside directors by considering the individual level network structural positions, including both network brokerage and network centrality. However, the results contradict my expectation that more central directors may actually be less likely to gain additional board appointments. This may be caused by multiple reasons. First of all, firms may not want an over-central person on board. As I discussed earlier, network centrality represents network status and power. Although additional status and power can help a focal firm in a variety of ways, it may also change the current power dynamics on boards. For example, the addition of a powerful director may reduce the CEO power relative to the board power. Or similarly, introducing a powerful outsider director may challenge the existing power and status of the board current chair, or other directors. Therefore, to maintain a stable power dynamic and to protect personal interests, recruiting boards may choose not to have a central person.

Second, a central director may not want to accept additional board offers. Research has argued that directors are sitting on boards to gain power, status, network connections, for further promotions and other benefits (Boivie et al., 2016b). However, as a central person in the director network, the focal director may be satisfied with his/her current power, status and connections. In addition, being a central person in a network requires the focal individual to spend a lot of time to deal with the information flows and maintain relationships. Given that each individual will have a limited resource and time, the focal individual may not be able to accept additional job offers.

Further, network embeddedness research has suggested that individuals may suffer from network inertia which prevents them from changing the current network position (Kim et al., 2006). Building on the research of organizational inertia, research in network embeddedness suggests that individuals may become path dependent, and thus become less open to changes (Li & Rowley, 2002). As a result, a central director may want to stay within his/her current network with a reduced willingness to consider additional possibilities.

Moreover, study 1 also suggests that being a network broker can help individuals gain more additional board appointments. As I discussed earlier, firms prefer network brokers who can provide information benefits with minimum information redundancy. Firms with network brokerage don't need to overthink about the change of their power dynamics because brokerage cannot represent the overall network power and status. From an individual perspective, network brokers can be more informed compared to other people, given the amount of non-redundant heterogenous information they can receive. Network brokers may also suffer less from network inertia and path dependence because when absorbing heterogenous and diversified information, the focal directors can develop a more innovative and diversified perspective, and thus are less likely to limit themselves to a fixed pattern.

Study 2 shows that directors who have more network brokerages may be more likely to exit from an existing company. Network brokerage positions enable the focal directors to receive more diversified information and thus be able to learn about other board opportunities which may be able to better satisfy their personal and career goals. Given their limited time and availability, they have to exit from the focal company. However, central directors, surprisingly, are less likely to exit from existing companies. Some may think this is because central directors' network connections mainly come from their firms. Leaving their current firms may lead to a reduction of their centrality. However, given that the empirical results fail to support Hypothesis 8, and fail to find any significant relationship between firm centrality and director exit, the likelihood of this explanation is reduced. Another possible explanation is based on the network embeddedness and network inertia argument. Because central directors have higher network embeddedness, which also contributes to a higher level of network inertia, it is harder for them to break existing ties. This inertial effect may cancel the positive relationship between centrality and director exit based on information benefits, and thus contribute to a negative but non-significant result.

Study 3 further supports the network embeddedness and inertial argument by showing a negative relationship between network outsider ratio and director company tie-formation. As I discussed earlier, when a director tries to maximize his/her network connections and gain network capital and power, the most efficient way is to establish ties with people outside his/her network. However, the results suggest that directors are not that rational. They are more likely to choose to stay within the circle of familiar people. Moreover, the failure to find support for Hypothesis 3a suggests that even when focal directors already have redundant ties which can connect them back to their current companies and network, they still won't choose to go to companies which may bring them new network partners. This further supports the notion that network inertia based on a high level of network embeddedness affectdirector's mobility decisions.

Study 3 provides some other interesting perspectives. Failing to support Hypothesis 1 suggests that indirect tie dissolution between a focal director and a company does not increase the likelihood for the director to go to that firm. From a company's perspective, the dissolution of an indirect tie to an individual may not change the network relationship when there is no big change in the company level network. From a director's perspective, there are also two possibilities. First, my study only considers formal interlock ties. However, the informal friendship tie may not break when the formal tie dissolves. Therefore, the focal director may still be able to obtain the same benefits through informal ties. Second, although research suggests that indirect ties can provide network benefits, directors may not realize such benefits. As a result, the focal directors may choose other ways to directly connect back to their old networks to reduce loss instead of establishing indirect ties.

5.2. Female Directors

Research on female directors mainly suggests that women are underrepresented on boards (Chen et al., 2016; Gregorič et al., 2017). Given the fact that female directors have been associated with higher legitimacy, and better performance, female directors should be more popular on the director labor market. Study 1 confirms this argument by finding that being female has a positive main effect on director selection. However, I fail to find any significant positive moderation effect for female directors. The results seem to suggest that among directors who occupy a superior network position, being female does not increase their likelihood to gain additional board appointment. Further, being female negatively moderates the relationship between director's brokerage and director selection, suggesting that compared to their male colleagues having similar characteristics, female directors who occupy a position with more brokerage are less likely to have additional board seats. This result may indicate that although boards try to hire female directors, when considering network benefits, male directors are more preferred. Relatedly, through simulations, Martell, Emrich, and Robison-Cox (2012) have found that females can hardly be higher in the hierarchy due to the accumulation of discrimination at each level in the hierarchy.

In addition, women are believed to be more conservative and prefer stable environments. My study 2 further supports this by finding a negative main effect of being female and director exit. The main effects of being female in study 3 are shown in Model 4 and Model 5 which also confirm this conclusion.

Moreover, results in study 3 suggest that after an exit, female directors are more likely to go to companies which have a higher network outsider ratio, suggesting that once female directors decide to leave, they focus more on expanding their network. Integrating this finding with the results discussed above, it may be the case that female directors are more willing to invest the time to establish network capital.

5.3. Firm Level Contingencies on Director Mobility

In this dissertation, I also explored the effect of firm level characteristics on director mobility. Directors' current firm performance negatively affects director exit, suggesting that directors carefully plan their exit and are thus less likely to leave a firm with good performance because high-performing firms may help directors establish their reputation and status. Further, directors' current high firm performance also reduces the likelihood for an individual director to gain additional board appointment, confirming the assumption that I made earlier that directors only have very limited time and resources and thus can only focus on a few board roles. High performing companies may require more engagement and thus reduce the possibility for a director to hold an additional board appointment. Therefore, for directors, staying on board of a good performing firm on the one hand can help them increase their reputation and status; however, on the other hand, it may also decrease their chances to expand their network.

Further, companies' network positions, including centrality and brokerage, can also have very distinct effects. In general, companies which have greater brokerage are more willing to have directors with superior network positions. However, companies which have higher network structural power appear to be only open to directors who have more brokerage do not recruit directors who have higher network power. This finding can be viewed as evidence of network embeddedness and inertia at the board level. Boards of central companies want to maintain the existing network power dynamic and thus choose not to bring in another powerful person who may challenge the current balance. Similarly, boards of companies with brokerage positions are more open to diversity and change, and thus are more willing to have all directors with superior network position.

6. SUMMARY

6.1. Contributions

My dissertation research makes several contributions. First, this dissertation tries to provide a relatively complete view of director selection by considering director selection from both the firm and the individual perspective. From a firm perspective, study 1 demonstrates that firms select directors by considering their network superior positions, including brokerage position and network centrality position, thus combining director selection research with structural network theory. Further, my study suggests that central directors are less attractive to selecting firms, suggesting the need for a combined consideration of network embeddedness and board power dynamics in the director selection. Especially, study 3 complements study 1 at a network dyadic level from an individual perspective. Although failing to find support for the director's motivation to pursue social capital, study 3 has shown that directors are locked into their existing network and rarely go beyond their current network to establish brand new connections. This further supports the network embedded view, and thus contributes to our understanding of director selection at a more micro level.

From an individual perspective, this dissertation also contributes to director exit research by introducing the structural network perspective into the director exit literature. Given that director exit remains understudied, this dissertation enriches our current knowledge about director exit in general by adding network positions as antecedents to director exit. More specific, this dissertation further illustrates that information benefits associated with network brokerage position can affect directors' decision-making process, thus enriching our understanding of directors' decision making from a network behavior perspective. Especially by showing that directors who have more network brokerage position are more likely to leave their current company, my study further supports the view that director exits are more likely to be voluntary. In addition, this dissertation further discloses a negative relationship between a director's network centrality and exit from the board, further supporting the director network embeddedness argument, and showing that network embeddedness can prevent directors from getting additional new appointments but also from exiting from the current companies. This conclusion provides further insights into director exit research.

Moreover, this dissertation has examined a number of individual and firm level contingencies, which can further contribute to our understanding of director selection, director exit, and corporate governance. First, my dissertation discussed the labor market condition for female directors, and thus contributing to the board diversity literature. The results in study 1 and study 2 support existing research that female directors are more popular on the director labor market, and they are also more conservative and thus hesitate to leave their current company, adding evidence to the gender diversity literature. In addition, empirical results from study 3 also shows that after exiting a current company, a female director is more likely to expand her network by going to a company which has a higher network outsider ratio, suggesting that female directors may be more likely to take additional risk after experiencing a recent change, and thus enrich our understanding of director behavior and decision making. Further, although research suggests that at higher organizational hierarchy, females can become more central (Chu & Davis, 2016), my results suggest that females who are network brokers less likely to gain an additional board appointment, suggesting a possibility of unequal treatment of female directors. Although no solid conclusion on this topic can be made based on existing results, my research suggests the need for future research on the labor market experience of female directors.

This dissertation also shows that recruiting companies evaluate directors, including those who have superior network positions, based on firm performance. Directors in general may be aware of this evaluation standard and thus are less likely to exit from good performing firms. Only director who enjoy network brokerage benefits are more likely to exit from existing companies when his/her current firm performance is high. This result contributes to the performance evaluation, especially director evaluation research by providing direct evidence about the relationship between directors' firm performance and director selection, and director exit, especially for directors who have superior network positions.

Further, my dissertation contributes to the social network literature by showing how firm level network positions interact with individual level network positions to affect director selection and exit. Specifically, central recruiting firms are less likely to recruit central directors, suggesting a substitution effect between firm centrality and individual centrality on director selection. Recruiting firms with more network brokerage tend to be more willing to hire directors who have higher network centrality or more brokerage, suggesting a complementarity between firm brokerage and individual centrality and brokerage. With regard to exit, directors are more likely to exit from firms with more brokerage. These results go beyond the existing network literature by showing the dynamics among different networks at different levels, and thus enrich our understanding of network evolution and interactions.

Finally, this research provides empirical contributions to both the social network literature and governance literature by modeling director mobility at a dyadic level. By adopting the longitudinal stochastic modeling approach in study 3, this dissertation also provides a more accurate view of where directors move when they exit from previous boards, thus laying the micro-foundation of the network effect on director mobility.

6.2. Limitation and Future Directions

While I have attempted to empirically examine the relationship between network structure positions and director mobility from a firm and individual perspective, my dissertation only observes limited network positions and process underlying director-company tie formation and dissolution. Therefore, some other network factors and processes may also play a role in the director mobility process. For example, network clusters may be another structural factor which can affect director mobility, especially that this dissertation suggested a salient effect of network embeddedness. Further, relational embeddedness, such as network tie strength and private relationships, can also be factors to affect director mobility. As such, more research is needed to provide a broader picture of the director mobility.

My dissertation found network embeddedness and an inertial effect in the director mobility process. However, to make a solid conclusion about how network embeddedness may affect director mobility, more research should be conducted to explore the relevant mechanism(s). for example, qualitative studies employing survey and interviews can better show feelings and thoughts of individual directors, thus better exploring the nature of network embeddedness. Further, my dissertation results also suggest some possibility of potential mistreatment of female directors who occupy a superior network position. To better examine whether the mistreatment exits and how it affects female directors' mobility, further quality studies are necessary.

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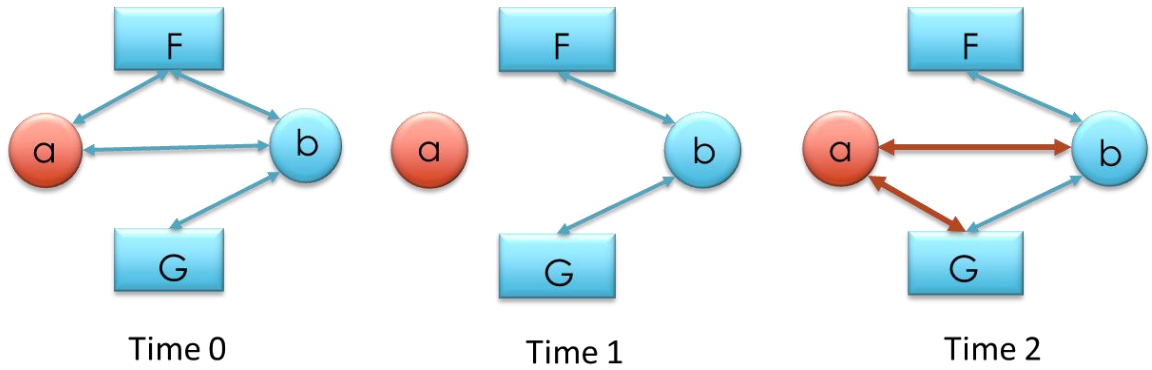
APPENDIX A

FIGURE 1 Hypothesis 1 (Study 3) Operationalization



Operationalization logic: When director a leaves company F at time 1, the indirect tie between a and company G through director b dissolves. In Hypothesis 1, I argue that a tends to reconstitute this broken tie by coming to G, and thus the indirect tie dissolution at time 1 predicts the tie formation between a and G at time 2.

APPENDIX B

TABLE 1. Correlations and Descriptive Statistics of Study 1

	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1.Additional board appointment	0.049	0.216	1.000							
2.Director's centrality	0.001	0.010	-0.010	1.000						
3.Director's brokerage	0.661	0.133	0.110	0.085	1.000					
4.Appointing firm's centrality	0.013	0.025	0.098	-0.022	0.462	1.000				
5.Appointing firm's brokerage	0.656	0.313	0.033	-0.030	0.155	0.266	1.000			
6.Gender	0.144	0.351	0.041	-0.011	0.098	0.055	0.010	1.000		
7.Current firm performance	0.051	0.092	0.015	-0.014	0.109	0.087	0.036	0.019	1.000	
8.Current industry median ROA	0.046	0.048	0.016	-0.009	-0.032	0.050	0.012	0.009	0.554	1.000
9.Current firm size	2.184	1.376	0.090	-0.033	0.546	0.555	0.189	0.089	0.179	0.145
10.Current firm slack	0.088	1.449	0.019	0.077	0.122	0.307	0.081	0.009	0.118	0.047
11.Current firm R&D intensity	0.037	0.146	0.011	-0.012	-0.036	-0.006	-0.041	-0.008	-0.136	0.064

TABLE 1. (Continued)

	Mean	Std. Dev.	1	2	3	4	5	6	7	8
12.Total independent directors in the current company	7.905	2.322	0.051	0.372	0.661	0.387	0.169	0.082	-0.020	-0.108
13.Total female directors in the current company	1.516	1.086	0.062	0.033	0.457	0.378	0.136	0.281	0.047	-0.002
14.Total board appointments of the current company	13.549	4.793	0.087	0.214	0.806	0.659	0.267	0.086	0.067	-0.018
15.CEO compensation of the current firms	8.401	1.005	0.077	0.017	0.363	0.353	0.123	0.056	0.096	0.039
16.CEO tenure of the current firms	7.871	7.237	-0.052	-0.029	-0.153	-0.079	-0.012	-0.034	0.010	-0.006
17.Director age	62.780	10.843	-0.028	-0.003	0.027	-0.001	0.025	-0.117	-0.004	-0.026
18.Director tenure	9.280	7.942	-0.076	-0.002	-0.086	-0.056	0.005	-0.121	0.017	0.005

TABLE 1. (Continued)

	9	10	11	12	13	14	15	16	17	18
9.Current firm size	1.000									
10.Current firm slack	0.190	1.000								
11.Current firm R&D intensity	-0.070	0.174	1.000							
12.Total independent directors in the current company	0.351	0.085	-0.069	1.000						
13.Total female directors in the current company	0.380	0.068	-0.053	0.510	1.000					
14.Total board appointments of the current company	0.571	0.164	-0.054	0.774	0.514	1.000				
15.CEO compensation of the current firms	0.447	0.059	0.007	0.308	0.270	0.428	1.000			
16.CEO tenure of the current firms	-0.092	0.011	0.013	-0.138	-0.123	-0.137	-0.095	1.000		
17.Director age	0.014	0.013	-0.011	0.021	-0.038	0.018	0.002	0.071	1.000	
18.Director tenure	-0.036	0.000	-0.013	-0.084	-0.088	-0.076	-0.078	0.218	0.350	1.000

TABLE 2. Multi-Failure Event History Analysis Results of Study 1

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Current industry median ROA	0.332	1.062*	1.793***	2.119***	3.824	3.935
	(0.456)	(0.552)	(0.607)	(0.628)	(2.790)	(2.815)
	[0.466]	[0.055]	[0.003]	[0.001]	[0.170]	[0.162]
Current firm size	0.128***	0.015	0.014	0.022	0.013	0.012
	(0.020)	(0.022)	(0.022)	(0.022)	(0.058)	(0.059)
	[0.000]	[0.503]	[0.511]	[0.321]	[0.820]	[0.842]
Current firm slack	-0.024	-0.015	-0.011	-0.007	0.004	0.006
	(0.015)	(0.016)	(0.015)	(0.015)	(0.033)	(0.033)
	[0.119]	[0.348]	[0.484]	[0.638]	[0.910]	[0.868]
Current firm R&D intensity	0.223	-0.179	-0.240	-0.115	-0.284	-0.242
	(0.147)	(0.203)	(0.198)	(0.203)	(0.457)	(0.481)
	[0.130]	[0.379]	[0.227]	[0.571]	[0.535]	[0.615]
Total independent directors in the current company	-0.013	0.005	0.007	0.001	0.007	0.014
	(0.014)	(0.017)	(0.017)	(0.017)	(0.055)	(0.055)
	[0.341]	[0.753]	[0.683]	[0.934]	[0.900]	[0.807]
Total female directors in the current company	0.013	0.009	-0.014	-0.016	-0.042	-0.039
	(0.025)	(0.026)	(0.026)	(0.025)	(0.071)	(0.070)
	[0.609]	[0.717]	[0.574]	[0.528]	[0.552]	[0.583]
Total board appointments of the current company	0.042***	-0.032***	-0.032***	-0.032***	-0.066**	-0.080**
	(0.007)	(0.009)	(0.009)	(0.009)	(0.032)	(0.033)
	[0.000]	[0.001]	[0.001]	[0.000]	[0.039]	[0.016]

TABLE 2. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CEO compensation of the current firms	0.151***	0.186***	0.192***	0.187***	-0.043	-0.042
	(0.031)	(0.035)	(0.035)	(0.035)	(0.055)	(0.055)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.432]	[0.444]
CEO tenure of the current firms	-0.014***	-0.012***	-0.012***	-0.012***	-0.013	-0.013
	(0.004)	(0.004)	(0.004)	(0.004)	(0.012)	(0.012)
	[0.000]	[0.003]	[0.004]	[0.004]	[0.262]	[0.286]
Director age	-0.006	-0.009	-0.008	-0.008	-0.009	-0.009
	(0.016)	(0.017)	(0.018)	(0.018)	(0.009)	(0.009)
	[0.720]	[0.598]	[0.654]	[0.653]	[0.289]	[0.326]
Director tenure	-0.057***	-0.055***	-0.054***	-0.053***	-0.055***	-0.057***
	(0.010)	(0.011)	(0.011)	(0.011)	(0.015)	(0.015)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Director's centrality		-0.090**	-0.092**	-0.159***	-27.017	-464.126*
		(0.042)	(0.042)	(0.037)	(18.428)	(246.735)
		[0.034]	[0.030]	[0.000]	[0.143]	[0.060]
Director's brokerage		4.718***	4.804***	5.269***	8.127***	8.215***
		(0.289)	(0.303)	(0.321)	(0.891)	(0.894)
		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Gender			0.198***	0.162	0.141	0.145
			(0.067)	(0.105)	(0.133)	(0.133)
			[0.003]	[0.124]	[0.289]	[0.277]

TABLE 2. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Current firm performance			-0.709***	-0.588**	-2.655***	-2.782***
			(0.220)	(0.295)	(0.837)	(0.857)
			[0.001]	[0.046]	[0.002]	[0.001]
Current firm performance*Director's centrality				-2.489**		
				(1.221)		
				[0.042]		
Current firm performance*Director's brokerage				-0.890*		
				(0.458)		
				[0.052]		
Gender *Director's centrality				-2.425		
				(1.639)		
				[0.139]		
Gender *Director's brokerage				-11.834***		
				(2.230)		
				[0.000]		
Appointing firm's centrality					0.044**	-1.347**
					(0.020)	(0.541)
					[0.026]	[0.013]
Appointing firm's brokerage					0.005	1.319**
					(0.004)	(0.634)
					[0.155]	[0.038]

TABLE 2. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Appointing firm's centrality*Director's centrality						-27.101***
						(10.145)
						[0.008]
Appointing firm's centrality*Director's brokerage						-0.094
						(0.322)
						[0.770]
Appointing firm's brokerage*Director's centrality						25.347**
						(12.192)
						[0.038]
Appointing firm's brokerage*Director's brokerage						0.055**
						(0.025)
						[0.028]
Observations	54,292	54,292	54,292	54,292	4,294	4,294

*** p<0.01, ** p<0.05, * p<0.1 Robust standard error in the parenthesis; p values in brackets.

TABLE 3. Hypotheses Testing Results of Study 1

Hypothesis	Proposed Effect	Empirical Result
H1	Director's individual centrality is positively associated with his or her possibility of obtaining subsequent additional board appointments	Negative and significant
H2	Director's individual brokerage is positively associated with his or her possibility of obtaining subsequent additional board appointments	Supported
H3	Being female positively moderates the relationship in H1	Not significant
H4	Being female positively moderates the relationship in H2	Negative and significant
H5	A director's current firm performance positively moderates the relationship in H1	Negative and significant
H6	A director's current firm performance positively moderates the relationship in H2	Negative and significant
H7	A recruiting firm's centrality negatively moderates the relationship in H1	Supported
H8	A recruiting firm's centrality positively moderates the relationship in H2	Not significant
H9	A recruiting firm's brokerage positively moderates the relationship in H2	Supported
H10	A recruiting firm's brokerage positively moderates the relationship in H2	Supported

TABLE 4. Correlations and Descriptive Statistics of Study 2

	Mean	Std. Dev.	1	2	3	4	5	6	7	8
1.Director exit	0.181	0.385	1.000							
2.Director's centrality	0.001	0.010	-0.006	1.000						
3.Director's brokerage	0.661	0.133	0.056	0.085	1.000					
4.Exiting firm's centrality	0.013	0.024	-0.005	-0.021	0.459	1.000				
5.Exiting firm's brokerage	0.651	0.304	0.033	-0.028	0.187	0.280	1.000			
6.Gender	0.144	0.351	-0.011	-0.011	0.098	0.054	0.027	1.000		
7.Current firm performance	0.051	0.092	-0.034	-0.014	0.109	0.104	0.089	0.019	1.000	
8.Current industry median ROA	0.046	0.048	-0.008	-0.009	-0.032	0.048	0.076	0.009	0.554	1.000
9.Current firm size	2.184	1.376	0.049	-0.033	0.546	0.537	0.209	0.089	0.179	0.145
10.Current firm slack	0.088	1.449	0.021	0.077	0.122	0.293	0.084	0.009	0.118	0.047
11.Current firm R&D intensity	0.037	0.146	0.028	-0.012	-0.036	-0.014	-0.033	-0.008	-0.136	0.064
12.Total independent directors in the current company	7.905	2.322	0.007	0.372	0.661	0.373	0.165	0.082	-0.020	-0.108

TABLE 4. (Continued)

	Mean	Std. Dev.	1	2	3	4	5	6	7	8
13.Total female directors in the current company	1.516	1.086	0.021	0.033	0.457	0.327	0.152	0.281	0.047	-0.002
14.Total board appointments of all current companies	13.549	4.793	0.022	0.214	0.806	0.653	0.292	0.086	0.067	-0.018
15.CEO compensation of the current firms	8.401	1.005	0.015	0.017	0.363	0.331	0.133	0.056	0.096	0.039
16.CEO tenure of the current firms	7.871	7.237	-0.033	-0.029	-0.153	-0.074	-0.036	-0.034	0.010	-0.006
17.Director age	62.780	10.843	0.058	-0.003	0.027	0.035	0.020	-0.117	-0.004	-0.026
18.Director tenure	9.280	7.942	0.023	-0.002	-0.086	-0.043	-0.007	-0.121	0.017	0.005

TABLE 4. (Continued)

	9	10	11	12	13	14	15	16	17	18
9.Current firm size	1.000									
10.Current firm slack	0.190	1.000								
11.Current firm R&D intensity	-0.070	0.174	1.000							
12.Total independent directors in the current company	0.351	0.085	-0.069	1.000						
13.Total female directors in the current company	0.380	0.068	-0.053	0.510	1.000					
14.Total board appointments of all current companies	0.571	0.164	-0.054	0.774	0.514	1.000				
15.CEO compensation of the current firms	0.447	0.059	0.007	0.308	0.270	0.428	1.000			
16.CEO tenure of the current firms	-0.092	0.011	0.013	-0.138	-0.123	-0.137	-0.095	1.000		
17.Director age	0.014	0.013	-0.011	0.021	-0.038	0.018	0.002	0.071	1.000	
18.Director tenure	-0.036	0.000	-0.013	-0.084	-0.088	-0.076	-0.078	0.218	0.350	1.000

TABLE 5. Multi-Failure Event History Analysis Results of Study 2

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Current industry median ROA	-0.032	0.166	0.695**	0.508	3.451***	3.537***
	(0.205)	(0.236)	(0.310)	(0.310)	(1.079)	(1.073)
	[0.875]	[0.481]	[0.025]	[0.101]	[0.001]	[0.001]
Current firm size	0.070***	0.027***	0.028***	0.026***	0.029	0.029
	(0.009)	(0.009)	(0.009)	(0.009)	(0.040)	(0.040)
	[0.000]	[0.004]	[0.003]	[0.005]	[0.471]	[0.467]
Current firm slack	0.010	0.014**	0.018***	0.016**	-0.023	-0.025
	(0.006)	(0.006)	(0.007)	(0.007)	(0.025)	(0.026)
	[0.112]	[0.029]	[0.006]	[0.017]	[0.373]	[0.321]
Current firm R&D intensity	0.357***	0.268***	0.206**	0.195**	0.718**	0.685**
	(0.090)	(0.086)	(0.086)	(0.086)	(0.355)	(0.341)
	[0.000]	[0.002]	[0.017]	[0.023]	[0.043]	[0.044]
Total independent directors in the current company	-0.019***	-0.028***	-0.029***	-0.026***	-0.073*	-0.072*
	(0.007)	(0.008)	(0.008)	(0.008)	(0.039)	(0.039)
	[0.008]	[0.000]	[0.000]	[0.001]	[0.057]	[0.067]
Total female directors in the current company	-0.017	-0.014	-0.007	-0.007	-0.064	-0.062
	(0.011)	(0.011)	(0.011)	(0.011)	(0.061)	(0.061)
	[0.123]	[0.199]	[0.565]	[0.548]	[0.294]	[0.310]
Total board appointments of the current company	0.011***	-0.031***	-0.032***	-0.032***	-0.059***	-0.061***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.021)	(0.022)
	[0.001]	[0.000]	[0.000]	[0.000]	[0.005]	[0.005]

TABLE 5. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
CEO compensation of the current firms	-0.038***	-0.029***	-0.026**	-0.027**	-0.144**	-0.139**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.058)	(0.058)
	[0.000]	[0.008]	[0.017]	[0.014]	[0.013]	[0.017]
CEO tenure of the current firms	-0.006***	-0.005***	-0.004***	-0.004***	-0.002	-0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.008)	(0.008)
	[0.000]	[0.001]	[0.003]	[0.002]	[0.773]	[0.713]
Director age	0.001***	0.002***	0.002***	0.002***	0.008	0.008
	(0.000)	(0.000)	(0.000)	(0.000)	(0.006)	(0.006)
	[0.003]	[0.002]	[0.002]	[0.002]	[0.196]	[0.243]
Director tenure	0.005***	0.007***	0.007***	0.007***	-0.016**	-0.016**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.008)	(0.008)
	[0.000]	[0.000]	[0.000]	[0.000]	[0.034]	[0.038]
Director's centrality		0.605	0.613	-1.914	-26.553	-23.799
		(1.291)	(1.291)	(3.141)	(17.321)	(52.968)
		[0.639]	[0.635]	[0.542]	[0.125]	[0.653]
Director's brokerage		2.289***	2.389***	2.296***	15.314***	15.469***
		(0.116)	(0.119)	(0.123)	(0.671)	(0.657)
		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Gender			-0.074***	-0.081**	-0.139	-0.141
			(0.028)	(0.032)	(0.114)	(0.114)
			[0.007]	[0.010]	[0.222]	[0.218]

TABLE 5. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Current firm performance			-0.497***	-0.247*	0.461	0.435
			(0.115)	(0.140)	(0.625)	(0.601)
			[0.000]	[0.077]	[0.460]	[0.469]
Gender *Director's centrality				2.031		
				(5.805)		
				[0.726]		
Gender *Director's brokerage				0.089		
				(0.228)		
				[0.698]		
Current firm performance *Director's centrality				-89.388		
				(100.244)		
				[0.373]		
Current firm performance *Director's brokerage				2.551***		
				(0.615)		
				[0.000]		
Exiting firm's centrality					-0.021	-0.127
					(0.018)	(0.084)
					[0.251]	[0.132]
Exiting firm's brokerage					-0.220	-0.643*
					(0.241)	(0.336)
					[0.361]	[0.055]

TABLE 5. (Continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Exiting firm's centrality*Director's centrality						6.701
						(24.655)
						[0.786]
Exiting firm's centrality*Director's brokerage						0.431
						(0.317)
						[0.174]
Exiting firm's brokerage*Director's centrality						-4.830
						(109.206)
						[0.965]
Exiting firm's brokerage*Director's brokerage						3.864**
						(1.903)
						[0.042]
Observations	54,292	54,292	54,292	54,292	9,303	9,303

*** p<0.01, ** p<0.05, * p<0.1

Robust standard error in the parenthesis; p values in brackets

TABLE 6. Hypotheses Testing Results of Study 2

Hypothesis	Proposed effect	Empirical Results
H1	A director's network brokerage is positively associated with the likelihood of director exit	Supported
H2	A director's centrality is positively associate with the likelihood of director exit	Not significant
H3	Being female negatively moderates the relationship in H1	Not significant
H4	Being female negatively moderates the relationship in H2	Not significant
H5	A director's current firm performance positively moderates the relationship in H1	Supported
H6	A director's current firm performance positively moderates the relationship in H2	Not significant
H7	The network centrality of an individual's current firm negatively moderates the relationship in H1	Not significant
H8	The network centrality of an individual's current firm negatively moderates the relationship in H2	Not significant
H9	The network brokerage of an individual's current firm negatively moderates the relationship in H1	Positive and significant
H10	The network brokerage of an individual's current firm negatively moderates the relationship in H2	Not significant

TABLE 7. SIENA Network Analysis of Indirect Tie Dissolution (Study 3)

	Model 1	Model 2	Model 3
Rate parameters:			
Rate parameter period 1	0.188***	0.188***	0.187***
	(0.015)	(0.015)	(0.014)
Rate parameter period 2	0.186***	0.187***	0.186***
	(0.014)	(0.014)	(0.015)
Other parameters:			
ROA	0.063	0.062	0.104
	(1.647)	(1.532)	(1.617)
Firm size	0.024	0.023	0.024
	(0.061)	(0.063)	(0.059)
Firm centrality	0.506	0.521	0.516
	(1.649)	(1.625)	(1.555)
Duality	–0.105	–0.107	–0.101
	(0.169)	(0.174)	(0.170)
Director age	–0.110***	–0.110***	–0.109***
	(0.022)	(0.023)	(0.023)
Director gender	–0.369	–0.355	–0.381
	(0.366)	(0.350)	(0.366)
Director's existing ties	–0.110	–0.089	–0.145
	(0.635)	(0.588)	(0.670)
Indirect tie dissolution		–0.259	–0.545
		(1.198)	(1.555)
Interaction terms:			
Director's existing ties*indirect tie dissolution			2.557
			(3.233)
Director's gender* indirect tie dissolution			1.496
			(2.653)

*** p<0.01, ** p<0.05, * p<0.1
Standard error in the parenthesis

TABLE 8. SIENA Network Analysis of Network Outsider Ratio (Study 3)

	Model 1	Model 2	Model 3
Rate parameters:			
Rate parameter period 1	0.634***	0.988***	0.987***
	(0.036)	(0.065)	(0.063)
Rate parameter period 2	0.664***	1.055***	1.054***
	(0.037)	(0.063)	(0.062)
Other parameters:			
ROA	–2.247**	–2.574**	–2.639**
	(1.044)	(0.979)	(0.993)
Firm size	–0.007	–0.093**	–0.094**
	(0.041)	(0.036)	(0.037)
Firm centrality	0.030	–3.105***	–2.968***
	(1.206)	(0.948)	(0.973)
Duality	–0.224	–0.394***	–0.393***
	(0.111) **	(0.100)	(0.103)
Director age	–0.064***	–0.026***	–0.026***
	(0.013)	(0.007)	(0.007)
Director gender	0.823***	0.368**	0.874**
	(0.241)	(0.144)	(0.306)
Director's existing ties	1.077***	0.377	-2.574
	(0.267)	(0.199) **	(4.904)
Network outsider ratio		–4.700***	–4.760***
		(0.117)	(0.150)
Interaction terms:			
Director's existing ties*Network outsider ratio			–3.111
			(5.125)
Director's gender* Network outsider ratio			0.669**
			(0.337)

*** p<0.01, ** p<0.05, * p<0.1
Standard error in the parenthesis

TABLE 9. Hypotheses Testing Results of Study 3

Hypothesis	Proposed effect	Empirical Results
H1	After exiting a board, a focal director is more likely to join a board that has at least one director from the focal director's prior board which he or she has just left.	Not significant
H2	After exiting a board, a focal director is more likely to join a board that has more directors who are outsiders to the focal director's network.	Negative and significant
H3a	The number of existing ties between the focal director and directors of his or her prior board will negatively affect H1	Not significant
H3b	The number of existing ties between the focal director and directors of his or her prior board will positively affect H2.	Not significant
H4	Being female will positively affect H1	Not significant
H5	Being female will negatively affect H2	Positive and significant